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# SOME NOTES ON ADRENALIN CHLORIDE.

By Bernard Bennette, L.D.S.Edin.

In adrenalin we have an agent of the greatest use and importance. It has rendered many of our operations more pleasant and easy, and apart from this, judiciously used, it is a time saver of the first class.

First of all as to the care to be taken of it. It should be kept in the brown bottles in which it is supplied, securely stoppered, and preferably in a dark place. Chloretone is the ingredient which insures sterility of the solution when used with care. When required only as much as is required at the time should be decanted, into a minim glass, watch glass or other suitable receptacle, the best of all being perhaps a Dappen's glass. These little glasses are extremely useful, the shape is ideal and they are readily sterilised.

The bottle must be stopped as soon as sufficient solution has been poured out, and returned to its place.

Adrenalin is the most powerful constrictor of peripheral blood vessels that we possess. Take a case of severe hæmorrhage after extraction. Clear out any blood clot which may be



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there, and pack the socket moderately lightly with wool saturated with the agent; apply another larger piece of wool merely moistened and hold in place or direct the patient to bite upon it, and in nine cases out of ten all hæmorrhage has ceased within five minutes.

Now there is a drawback to adrenalin and that is secondary hæmorrhage, this though slight as a rule is sometimes annoying. If we could combine with the adrenalin some agent compatible with it, which would coagulate the blood, it would be a great improvement. Of course this agent cannot be mixed with any coagulant such as silver nitrate, and be expected to keep indefinitely. It is an organic compound, obtained from animal matter and has to be treated as such. Neverthless here is a hint—add two drops of silver nitrate of a 10 per cent. solution to the usual amount of adrenalin poured out, and then use in the bleeding socket and it will be found on removing the plug the next day that the difficulty of secondary hæmorrhage has been overcome.

Adrenalin is frequently used as (if one may call it so) a *preventive* styptic; that is, it is used before an operation in order to render the field bloodless; as for instance in the preparation of roots for crowns, the excision of masses of gum tissue hiding the edges or occupying the entire space of cavities and lastly in the extraction of teeth. This brings us to the question of locum anæsthesia, but it is not the object of this short paper to enter to any extent into that subject except with regard to the employment of adrenalin as an adjunct.

It is claimed that the mere application of adrenalin to a mucous surface such as the oral epithelium that small operations may be rendered bloodless. Experience leads one to say that such is hardly the case, except in the very smallest. In other words, outward application may be satisfactory in a case such as a stone in the engine accidentally coming in con-

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tact with the gum tissue in the preparation of difficult teeth for crowning.

The best way all round in the use of this drug is to inject it.

Take as an instance a cavity with a large growth of hypertrophied gum tissue extending into it. These teeth are as a rule in a very foul condition so great care is necessary to properly sterilise tooth and gum. Apply one small drop of pure phenol to the normal gum away back from the ingrowing portion. Now inject very slowly, a cocaine or eucain solution combined with adrenalin. The needle need not be inserted deeply, but pressure must be kept up and the needles not removed till all the gum tissue in and around the tooth is blanched. The growth is then removed with a sharp knife painlessly and bloodlessly. The reason for injecting away from and not into the gum growth is, that anæsthesia and ischaernya are never complete after an injection which has been made into loose and inflamed tissue.

The greatest advantage of adrenalin as a constituent of a local anæsthetic solution, particularly when used for the extraction of teeth, does not lie so much in the bloodless nature of the operation in itself, as in the aid it gives to the anæsthetic used. By constricting the vessels of the part the anæsthetic agent has a much better chance. It is confined for a considerable length of time just to the spot where it is needed. Cocaine, etc., injected alone soon diffuse ; cocaine not quite so quickly perhaps as eucain and novocain. The addition of adrenalin thus acts by confining the anæsthetic, preventing its rapid absorption, with a resulting prolongation of anæsthesia and lessened risk of toxic effect.

For application to the gum to lessen the pain of injection, the writer has found nothing like a saturated solution of novocain in menthol spirit. Menthol is dissolved in rectified spirit till saturation point is reached ; a few drops of this are

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taken and novocain mixed with it. It is applied to the gum at the point of injection and allowed to remain one minute.

In conclusion it may be said that in adrenalin we have a friend in very deed, always ready always efficient, and that no dental or for that matter general, surgeon should be without it; it is scarcely likely that many are.

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SCHOOL DENTISTRY.—An interesting addendum to the medical inspection of elementary school children is being tried experimentally at Cambridge. Whilst an Education Committee may legally bear the cost of the medical inspection, it cannot, of course, pay for remedying, medically or surgically, of the physical defects which the inspection reveals—it can only notify the parents, leaving them to do what they see fit or can afford. However, one Mr. Sedley Taylor offered a gift of £500 in order that dentists might be employed to remedy, so far as dentistry may, the defects discovered by inspection of the children's teeth. Between 700 and 800 children were examined; and (as will readily be supposed) only some two per cent. of them were found to have sound sets of teeth The others required all degrees of operation, from the simple "stopping," which sufficed in a large proportion of cases, up to operations serious enough to require anæsthetics. Very few of the parents refused their consent—which had necessarily to be obtained first; and, what is perhaps more surprising, only a dozen or so of the children made any difficulty, whilst the great majority, inspired perhaps by a sort of emulation or esprit de corps, faced the ordeal with admirable courage and even cheerfulness. The affair was deemed important enough by the Local Government Board for the special sending to Cambridge of a visiting official; and presently a report on the beneficial results may serve, in other school districts, to quicken the attention of parents to a subject which is too little regarded by very many even of those who in other respects are thoroughly attentive to their children's wellbeing.

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British Journal of Dental Science

LONDON, JANUARY 1, 1908.

## ORDINARY CARE AND SKILL.

It is an axiom in law that, when a person places himself under the advice or treatment of a professional man, it is expected of the latter that he must aid his client to the best of his ability. The law does not ask him to win his cause or cure his patient, but it does ask and expect that he shows the ordinary care and skill his position ought to warrant, and if this is not forthcoming it is open for the aggrieved client to bring an action at law. Such an action was recently brought by a lady against her solicitor, from whom she was awarded damages for the careless handling of her case. We, as professional men, are equally liable for a similar action at the hands of a patient who has, or thinks he has, ground of complaint against us. Two cases which have recently been tried, and in both of which damages were obtained by the plaintiffs, show us the view the law takes in these matters.

The first case was that in which a mother took her little seven-year daughter to a dentist with respect to the irregularity of the child's teeth. We all know how anxious parents are when the permanent incisors appear that something should be done to make those teeth—which often erupt in an irregular manner—straight. In this case the lower permanent centrals were overlapping and the mother—in her ignorance—thought that if the temporary lower laterals were extracted the centrals would come straight. She therefore gave those instructions to the dentist. The dentist in his defence said that the mother put her finger on the irregular

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permanent incisors as the ones she wished to be removed and he accordingly did so. He further urged in his defence that if he had not extracted the teeth someone else would have done so.

The case shows shocking ignorance and cupidity on the part of the dentist and justifies the remarks of the Judge, who was of opinion "that the defendant's duty was to have considered the welfare of the patient and not, as he apparently did (if his own version was correct) blindly act on the instructions of the mother and callously extract permanent teeth to the permanent injury of the plaintiff." The Judge was also of opinion that punitive damages should be given which he fixed at fifty pounds, a sum which we do not think excessive considering the facts of the case.

The other case is not so straightforward and contains much conflicting evidence. Briefly it was a claim for damages for negligence in the extraction of teeth. It would appear that the defendant in attempting to extract a lower tooth, broke it and at a subsequent visit, in attempting to extract the fang, extracted the tooth next to it—whether by accident or design does not appear quite clear. The defendant said he had failed to extract the fang but had "drilled it to powder," but a surgeon called as a witness said he had discovered and extracted the fang after four operations. This was denied by the defendant who said this latter fang did not belong to the teeth he had operated upon.

The *crux* of the plaintiff's case was that the defendant had led him to believe he had extracted the fang, the cause of his pain, whereas he had not done so, and he seems to have suffered great pain for nearly two years not knowing the fang was there. This view seems to have impressed both judge and jury who found the defendant guilty of negligence and mulcted him in one hundred and fifty pounds damages.

We do not pretend to say whether the verdict was a just one, but we do say what we have often said before that it is a foolish and dangerous practice to affirm that every particle of a tooth is extracted if there is the slightest doubt on the

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point. We are all liable to failures in extraction, but if we tell the patient candidly that we believe a portion of tooth remains, we safeguard ourselves and let our patient know the possible cause of any future discomfort.

Another moral to be gained from this case is to strengthen our position by joining the London and Counties Medical Protection Society for which the L.D.S. is eligible.

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A Choice Advertisement.—Refreshing is the phraseology of an advertisement of matchless tooth powder culled from the columns of a native Indian paper :—

THAT CAN RADICALLY CURE.
All sorts of Diseases of the Teeth Nay,
All so-called Incurable Diseases of the Gums.
The very essence of Teeth.

THEREFORE
O YE MEEK AND SUFFERING MEN.
If you desire to have your Teeth, free
from all sorts of the diseases of the
Gums, ulcerations, caries of the teeth,
and if you desire to be a man
Then do not Lose a Moment
But Try This
Newest Discovery of the 20th Century
IT CURES THEM IN ELECTRIC
SPEED.
No remedy has been ever discovered which
works so majically. Use it for only a
week, and you will return to be
completely a new man.

TRY ! TRY ! ! TRY ! ! !

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The Royal Dental Hospital, Leicester Square, has received a donation of £100 from the Worshipful Company of Grocers.

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THE SMITH TURNER SCHOLARSHIP.—We wish to draw our readers' attention to the following announcement with respect to the Scholarship instituted in memory of Mr. Smith Turner. The Smith Turner Scholarship in dental mechanics, annual value, £30. The Scholarship is founded to help those students who, in the opinion of the Committee, have financial difficulty in completing the dental curriculum, and is open to any registered dental student who has not completed the curriculum required for a dental qualification. The Scholarship will be awarded after examination in dental mechanics (practical and *viva voce*), and be tenable for one or two years at the discretion of the committee. The Scholarship money will be paid to a dental school in discharge of fees. The first examination will be held in London at the Royal Dental Hospital on Wednesday, April 18th, 1908. Applications must be received on or before March, 1st, 1908. Form of application may be obtained of the Honorary Secretary, British Dental Association, 19, Hanover Square, London, W., to whom all communications should be addressed.

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SCHOOL CHILDREN'S SUB-COMMITTEE.—At a recent meeting of the Education Committee of the London County Council, the Day Schools' Sub-committee submitted a report upon the question of the medical inspection of school children. They proposed that the following special sub-committee should be formed to examine witnesses and take evidence in connection with the whole question of the medical treatment of children attending public elementary schools: Mr. Norman G. Bennett (British Dental Association), Sir Victor Horsley (British Medical Association), Dr. Charles Gray (Charity Organisation Society), Sir Edmund A. Currie (Metropolitan Hospital Sunday Fund), Mr. Douglas Owen (London Hospital), Mr. Robert J. Bland (Royal London Opthalmic Hospital), Dr. H. Morley Fletcher (St. Bartholomew's Hospital).

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# Abstracts of British & Foreign Journals.

## ARTIFICIAL ENAMEL.

By R. B. Tuller, D.D.S.

As time goes on there is something more to be noted and said about artificial enamel, that substance classed as a silicate cement, which has so recently been introduced as filling material for the teeth.

Several makes of silicate cements have been before the dentists of this country, all claiming excellent virtues or qualities in one way and another, and especially the essential one of being durable as well as translucent and life-like. Some of these claims have not been borne out when put to practical tests, the result being that a prejudice has been aroused with many against the whole class, when there certainly are rare virtues in some of them. The one that the writer has had most experience with, and the only one that he has had success with, as yet, is called artificial enamel (Ascher's) and the name is very aptly applied.

This particular product has been before the dental profession of Europe or some parts of it, for about five years; but, except in the hands of a very few, perhaps, it has not been before the profession here and subject to practical tests and usage much more than two years.

Two years in the hands of a large number of operators has shown something encouraging, if it has not been all that was hoped for, or could be wished for. It has proved that the new material is a valuable adjunct in the way of cement, if it may not yet be accepted as an ideal substance with reasonable claims of durability as a filling for a large variety of cavities.

The testimony of a large number of users would indicate that it can be relied upon for perhaps more than average durability; and with a more intimate knowledge of its peculiarities and the essential steps in compounding the two ingredients, liquid and powder, and also of manipulative precautions, the operator may find much closer approximation to the looked-for ideal.

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If a filling material in practical use in the mouth or in many mouths stands up reliably and without apparent waste or disintegration for two years, it is quite reasonable to expect it to do service for another two years. It should show clear evidence if any disintegation is under weigh; finding none after such time, the "table of expectation" goes up several points.

Remembering the varied results of mixing oxy-phosphate cement from the same "batch" and using similar proportions as far as could be observed, and remembering that artificial enamel is a cement, it would not be strange if some out of a number of fillings should prove defective, and soon show signs of breaking down. But that need not imply anything against the material *per se*, but simply that the mixing or manipulation had not been properly done in one or several particulars, possibly. One may so manipulate gold or amalgam that fillings are faulty and fail.

In making porcelain inlays most operators are unfortunate enough to have some of them come out, through some fault in the mix of cement which fails to hold. Not infrequently another mix from the same material and seemingly under exactly like condition, will hold the reset inlay indefinitely. Occasional failures to make them stay does not discountenance inlay work; and neither should some failures in artificial enamel discourage an operator as to further effort along that line with better understanding from experience.

Owing to lack of knowledge of exact proportions, or the impracticability of getting those exact proportions, if we knew them and the several conditions that have to be taken into account in mixing cements of any kind, such as time in mixing and time in handling after the mix (and before crystallization demands no further interference), temperature and perhaps humidity of the atmosphere, we can attain *perfect* results only by accident, but may approximate closely by experience and observation. Only by this means coupled with the data provided by those who have gone before can near perfection be attained.

In the first experiments with Ascher's enamel one would do well first to read the latest instructions—the later ones differing considerably from the first that accompanied the material—the result of greater experience—and then fill cavities in teeth out of the mouth, although the conditions

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of temperature are different, which should perhaps be taken into account. The producer of the enamel calls attention to this and says experiments out of the mouth should be brought up to the normal temperature of the body—or in round figures to 100 degrees F.—and be kept dry until crystalization has been effected.

But the unexperienced operator can learn many of the peculiarities of the enamel as to mixing and filling cavities out of the mouth without concerning himself about the temperature, except to remember that any cement will crystallize quicker, if that be desired, under warm instruments.

It is perhaps more difficult to give all the intimate and peculiar directions, how to handle the enamel in question in a variety of cavities, than almost any other material; and while it is a cement, it is different in many ways from any other, or from oxy-phosphate cements. In one particular, Ascher's enamel may be manipulated, within limits, up to the very time it becomes too hard to do so. In fact, it is essential to do the final finishing and burning with oiled burnishers just before it becomes too hard to yield.

If possible, a filling should be moulded to the form desired, after first forcing the material to sure contact with all the cavity walls, under cuts and margins, and then skilfully trimmed to remove all surplus overlapping beyond margins. This may be done when material is yet soft by the instrument used in putting it to place, or another if more convenient; but as the contouring progresses and filling growing harder there will be more trimming to be done that can only be done satisfactorily with a thin, long-pointed sharp blade (oiled) like a slender lancet blade. If the filling is kept level with margins in this way and the burnishing with the oiled burnishers as per instructions (which, by the way, must be done without much delay when the material is hardening rapidly), no disking or stripping will be necessary, and this is the most desirable way. The use of grit disks and strips should be avoided if possible for the reason that their use leaves a scratched and undesirable surface; hard to bring later to a high polish, which is essential if the best appearance in translucency and in shade are to be attained. High polish also stands for more certain durability. As to shades, one may have selected the best to correspond with the particular tooth involved and then spoil the effect by disking or stripping with a gritty disk or strip, unless a high, smooth polish

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can be secured after. This is not easy; for when this enamel is once hard it is very hard, and in the nature of it does not then take a fine polish without a long tedious effort, depending somewhat upon how hard it has become when the polishing is undertaken. There is a time before it is absolutely hard (but it don't tarry very long) when it may be cut down with disks and strips (always oiled with vaseline) and then polished with the highly polished celluloid or terra plastica strips and disks. But at that particular period of hardness, or lack of it, it is an easy matter to allow disks and strips to cut in too deep and destroy the contour one has taken pains to perfect; and at the same time it is too hard to do any further modelling to bring back to shape. It is altogether desirable, as before said, to do all finishing *without* the use of the usual grit disks and strips, no matter how fine. When the material is once too hard the celluloid disks and strips are of little use in getting a high polished surface.

In a proximal filling the celluloid high polished strips serve as a matrix and leave a surface equal to their own on the filling; but unless this matrix is held tight to the margins of the cavity, it will be easily understood that the material will squeeze out between the margins of cavity and leave an overlap, which should be removed; and sometimes this overlap blends so perfectly with the tooth enamel that it is difficult to detect. If left, it would in due time break away and leave the filling standing out beyond the cavity margin. When this has occurred, stripping with sharp strips may be necessary—or disking—at another time, of course, doing the final finish as best one can with the finest—always oiled.

It is often found that any burnisher—not metallic—is too large and clumsy to reach certain parts, and steel may be used by interposing the end of one of those thin flexible celluloid strips, thus keeping the metal from contact with the filling, but permitting of burnishing and modeling with a high polished surface against the filling—against, always oiled enough to prevent the material from sticking.

When these strips are used as a matrix they should be just slightly oiled to prevent material from sticking.

Instead of separating teeth where, for instance, there is to be considerable contour between two bicuspids, or a bicuspid and molar, to allow for matrix, and coming back to contact after matrix is removed, the writer does as he often has done with amalgam when conditions will permit, and that is,

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pack against a matrix and then before material is hard slide out the matrix and with force occlusally applied, and the use of burnishers to assist in modelling, if need be, bring about a proper contact with the neighbouring tooth, or even between two proximating fillings put in at the same time.

Separating teeth is a very unpleasant experience for the patient, if not extremely painful; and if the work can be accomplished properly without, it certainly should be done, and it can be in many instances.

With the enamel it is easy, comparatively, yet requiring some skill and judgment. Slightly oil and place in the matrix. It may be held to place by any one of several devices for the purpose, perhaps. Or it may be just slipped in and left until the material is packed in, the later being modelled by bending the strip around on either side with a burnisher. If the enamel is hardened some of the matrix may be pushed out of the way and the overlapping surplus removed, the matrix is again pressed around the filling and the surplus, if any, removed again. Or the matrix may be slipped out entirely and modelling and trimming done, and then matrix may be replaced, and pressed again around the filling. Now, before filling becomes too hard attend to the occlusal contouring, removing the overlap into the occlusal irregularities with sharp spoon and other excavators, and finally, before filling is too hard, remove the matrix and exert a pressure occlusally with a suitable ball or oval burnisher, to cause the filling to bulge out to fill the space that was occupied by the matrix strip. If this is done at the right time the contact will be correctly made and contour be entirely symmetrical, or easily regulated with the proper burnisher.

Speaking of these contour fillings of enamel in both bicuspids and molars the writer has quite a number of large ones under observation and some have been fully two years in place without signs of giving way from any cause. In some instances, where a failure has occurred, the fault has undoubtedly been in mixing or subsequent manipulation. Failure from such causes is not long in becoming manifest, and, with the writer, the second filling has proven satisfactory. While they remain in the tooth they do not leak, but stick to the walls and preserve. If there is any shrinkage at all of this material it shrinks slightly upon itself and never cleaves from the wall of the tooth, leaving a ditch, as

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shrinking amalgam does; at least, so far as the observation of the writer goes.

A word about shades. The shade guide provided with the material is far from being satisfactory. A shade guide should be of some such a nature as the guides for porcelain, easy to place in contact with the tooth for close comparison. And further, some little idea might be given in instructions as to combining shades, though it must of course depend even then largely on the artistic eye or sense of the operator as does the selection with the guide. One thing may be remarked with some certainty: that most operators will make the mistake oftener of selecting a shade too light for the case than too dark. Numbers two and four and a combination of these two shades are perhaps more often demanded than any others, or a pearl gray and a dark yellow.

The fine artistic ability or sense of an operator may be brought out by mixing two colours (separately), as a suitable yellow for the neck and a pearl gray for the incisal third or half, and gradual blending of the two between. The blend may be made very satisfactorily in the following manner: While the operator mixes one colour his assistant should mix the other. When ready the yellow, or cervical, should be placed first in the proper proportion; then the other placed quickly, a little dragging of the two shades back and forth a little at the joining of the two, only while material is soft the blend may be made very natural.

Matching up the shades of an incisor, for instance, or any exposed tooth, may be done to the greatest perfection. The writer has done it in case of incisors so that no one could detect repair, not even dentists asked to make the examination. In other cases, not so perfect as that just stated, the match as yet has been so close that it would escape the observation of any one without a very close examination intent on discovery. These fine matchings and shadings may be undone if, as has before been stated, finish is attempted by the use of even very fine cuttle fish disks; therefore, the operator should aim to so move and manipulate and trim with a sharp oiled blade, cutting always toward the cavity margins, followed by smoothing with suitable burnishers. Use steel burnisher with the celluloid strip held in left hand interposed between instrument and filling.

Oil (vaseline) should be used at the right time and place, but not in any way to become incorporated in the

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filling material before ready to surface. Oil no instrument used in packing material into cavity; nor until ready to smooth up the surface after modelling and shaping.—*American Journal.*

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## THE CAUSES, EFFECTS, AND TREATMENT OF DENTAL DISEASES IN CHILDREN.

By Edmund Owen, F.R.C.S.Eng.

*Consulting Surgeon to the Hospital for Sick Children, Great Ormond Street, London.*

### Causes.

One of the chief causes of dental disease in children is faulty feeding. I do not make this statement with hesitation and express the hope that you will agree with it. I am *sure* that you will.

It is a most unfortunate thing that at the present time so many mothers are unable or unwilling to suckle their children. And whilst they are groping about in the dark for some likely material with which to fill the feeding-bottle the children are apt to perish; whilst of those who live, not a few have teeth which are slow in making their appearance and quick in crumbling away or undergoing bacterial decay. One food after another is tried, and the child's alimentary canal, which even at that tender age is not destitute of physiological judgment, rejects them all. "Look at him," says the nurse, "he was a splendid child when born, and now he is reduced to a shadow!" His fontanelle delays its closure, and as he increases in age his legs become bandy, his chest falls in, and the ends of his diaphyses are found to be enlarged. And if his fat, his muscles, and his bones are failing from want of nourishment, is it likely that his *teeth*, which are still hidden away in the alveolar recesses, are the only tissues to escape? Nature herself seems to be ashamed of them; she delays bringing them forward, and when at last they come through the gum they are often found faulty in shape, in appearance, and in power of resistance. In other words, the child is Rickety. Rickets, in all probability, is due to the absorption from the alimentary canal of products

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of decomposition of unsuitable food, and the blood is, in consequence, deficient in nutritive qualities. The harder a tissue the greater is the demand which it has to make for mineral substances for its development; and thus, in the rickety child the teeth and the skeleton suffer most. The milk-teeth being, for the most part, formed before the child has acquired the rickety taint, may come through full of promise, but the teeth of the permanent set stand only a poor chance of reaching histological perfection.

In the course of the blind search for food, the one thing that strikes the semi-intelligent, anxious mother as essential is that the milk be "sterilized." There is a charm about that word. It seems to promise her that the child thus fed will be rendered proof against tuberculosis and scarlet fever, and every other disease which might be conveyed by milk. And it almost suggests to her that a child is safer thus brought up than by a wet-nurse, because her milk could not conveniently be "sterilized."

I am going to insist, then, that all these advertised, sterilized foods are bad for children's teeth; and, further, that if a child must be brought up on cow's milk, the milk should not be dealt with in any way likely to destroy or change that living something in the milk which is essential for the healthy development of the child.

If only the child survives the bottle age its food generally improves, for, as the mother puts it, "he is fed upon what we have ourselves"; that is to say, he is given meat juice, vegetables, and fresh foods which contain the living something. Doubtless it would be better for him if the meat which he ate were freshly killed and had not passed six weeks or more in cold storage; but, at any rate, his diet is improved. Enamel and dentine, the two hardest materials in the body, need the most nutritious, the freshest food obtainable, and the boy is getting some of it now.

When examining ancient British skulls one can scarcely fail to be struck by the appearance of the teeth. Incisors and molars have been worn down flat by the hard foods of the time, but they are not diseased. In many teeth the enamel has been ground off till the dentine is deeply exposed and, in its turn, a good deal rubbed away. But there is no decay; and for the most part the lower jaws are square and show good muscular markings, because those ancient people had to use their jaws. The condition of the teeth

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proves that. Would those teeth and those jaws be showing to-day such splendid anatomy if the owners had been reared on sterilized milk, patent foods, and doughy bread made of American flour? The idea is laughable, and the moral is clear.

There can be little doubt that the bread which English children now eat is not as good for supplying the elements of enamel and dentine as was the bread of a generation or two ago. The American flour, which is so largely imported, is the finest of the fine to suit the demands of the householder, who has been taught to expect it to be pure white, and for this it has to be deprived of much of its most valuable material. I submit that the best flour for bread is that made of wheat coarsely ground between the old-fashioned mill-stones. I would like to go back to the bread which I knew as a boy in East Anglia—bread with a hard, brown crust, and with crumb of a delicate nutty tint and flavour. The baking of this bread was done in brick ovens which had been heated by burning faggots, the loaves being put in upon the glowing ashes. Even when cut across and exposed to the air for several days these loaves would remain fresh, sweet, and delightful. The children of the time to which I refer were given a hard crust of this bread to suck at as the time for weaning began to draw near, and there could be nothing better for the physiological stimulation of the jaws, the gums, and the embedded teeth. But upon much of the bread which is now supplied it is difficult to find a decent crust, and children are brought up on paps and patent foods and on messes which have been evolved in a laboratory under the guidance, and for the benefit, of the advertising vendor. This state of affairs is all wrong. But I trust that no one will consider my condemnation of it as an opening for the discussion of tariff reform and protection, which the Chairman would, I know, promptly deem out of order. Still there are ways in which those subjects may have a direct bearing upon the prevention of dental disease as well as of imperial decay.

Except that oatmeal porridge is rich in minerals, I very much doubt if it is a good food for children—a little of it, yes; but when it is the chief food the child is apt to find with it insufficient work for his teeth and jaws, the result being that his jaws are ill-developed, and that the crowding teeth prove soft and friable. What, I would ask, is the general condition of children's teeth in Scotland and the North of England at the present time?



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For this faulty feeding it is difficult to say on whom the blame should be laid. It is of no use finding fault to-day with mothers and nurses; they are not here, either. What have you medical men and dental surgeons, to say on the question?

The manufacturer of drugs—the mere tradesmen—has of late taken upon himself to teach medical men how to prescribe, and the makers of patent foods dictate to the profession as well as to the public as to how children ought to be fed. And the public and the profession are equally content thus to be taught and to be led! Imagine, if you can, the ancient British mother bringing up her child on the patent foods of to-day; or, looking back a mere hundred years, say if you think children's teeth have as good a chance of being soundly developed now as then. These are days of quackery—quackery in foods, quackery in diets, quackery in religion, and, perhaps I might also say without offending either party, quackery in politics. Sterilized milk, patent foods, crustless bread made of defective flour or baked in gas ovens, foreign meat out of a cold storage, and tinned "etceteras," are ill-adapted for furnishing enamel which will be proof against the combined attack of lurking acids in the mouth and of the irrepressible micro-organisms which are swarming between closely-packed teeth of badly-developed jaws.

### Effects.

The general surgeon meets with two specially disastrous effects of dental disease, the more serious of them being the acute septic inflammation of the bone and periosteum which starts from the incubation of virulent germs in a carious tooth. As a result of this the Haversian vessels are plugged and the damaged piece of the jaw is apt to necrose. Abscess forms, and the child runs the risk of fatal pyæmia. The presence of a painful swelling about the jaw should at once cause a close inspection of the teeth to be made, and even in these days of praiseworthy conservatism in connection with dental troubles there should be no hesitation about extracting the offending tooth. The fact of the patient being unable to open his mouth is no longer to be regarded as an excuse for delay; if the forceps cannot be introduced into the mouth the tooth must he removed by an elevator. After the extraction everything may quietly settle down.

Another serious effect of dental disease is inflammation of

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the cervical lymphatic glands. If the infection is a quiet one the lymphoid elements of the gland are able to imprison and destroy the mirco-organisms, and no great harm may ensue ; but if the germs come swarming down in hordes, the lymph elements give up the unequal struggle, and suppuration takes place, perhaps down the whole cervical chain. The tissues around the glands are also involved, and an acute suppuration may occur large out of all proportion to the original lesion. Behold, how great a matter a little fire kindleth !

In some of the cases of glandular infection, either because of the power of resistance of the child or of the feebleness of the strain of the micro-organisms concerned, the glands are merely enlarged ; there is no threatening of suppuration. But the disturbance of their nutrition has lowered their vitality, and rendered them an easy prey to the bacilli of of tuberculosis. I am of opinion that many cases of cervical tuberculosis are originally due to a carious tooth having rendered the lymphatic glandular tissue the *pars minoris resistentiae.*

I would like to ask how the dental surgeon looks upon those cases of dental caries with a threatening of osteomyelitis or of cervical adenitis. Some dental surgeons, I know, speaking generally, make it almost a boast that they rarely extract a tooth. Such a one, I suppose, priding himself upon the possession of conservative principles, sets to work to clean and fill the diseased tooth. I suppose that I must not go so far as to say that a man is better without principles, as I might be misunderstood, but I will say that it is a thousand pities if this child's health and appearance should in any way be prejudiced by the fact that his dentist holds certain conservative views with an unyielding tenacity.

### Treatment.

As regards treatment, I have practically nothing further to say than may be found in the few suggestions which are scattered in my short paper. Prevention of dental disease in children is a better study than its treatment, and in my opinion the so-called "high civilization" of the present day is responsible for most of our dental troubles. I suppose that it is impossible for us to go back to the customs and the foods of those uncivilized and ignorant, but happy people who wandered over the Devonshire moors, and through its primaeval forests, in a suit of light blue paint; and in this ca hedr a

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city the mere suggestion of the advantages of such retrogression seems almost an impiety. But I may at least be permitted to sigh for those romantic times when Devonshire was sending out her splendid sailor sons to meet the Armada—to those happy days when American-ground flour, Chicago beef, foreign meat-essences of very doubtful origin, and Swiss foods and condensed milk were still unknown; to the days before the baker had undergone that process of commercial education which revealed to him the fact that flour could be whitened by alum, and that pastry could be made "light" by baking-powder. If it should be argued that, at any rate, these things are sold at such a price as to place them within the reach of the poor and ignorant, I will not deny it. Indeed, that is one of the chief reasons for my lamentation! —*British Medical Journal.*

## PROSTHETIC SUGGESTIONS.

By N. S. Hoff, Ann Arbor, Mich.

In the preparation of the models themselves for the vulcanizing process, we often make the mistake of saturating them with water after we have secured the model, or in boiling out the wax. We ought never to do this; a plaster model that is very hard and dense, if simply dropped into water for thirty seconds and taken out, can be whittled very easily. If you have a very thin model it will soak up enough water in a short time to sufficiently destroy its integrity to cause it to break under the pressure put upon it in closing the flask.

In the matter of flasking these pieces, I have not yet found a flask that is at all to my notion. All of our flasks are not deep enough. You cannot put into any of the brass flasks on the market an ordinary model with the teeth on it and have more than perhaps half an inch of plaster over the palate where the great amount of pressure is usually brought to bear. Sometimes models here are cut down to possibly one-eighth of an inch, so that you can hold them up to the light and almost see through them. You cannot expect a model of that kind to stand the enormous pressure of two tons that Dr. Prothero says is frequently put upon such a model, with-

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out its fracturing. The support that you get from the investing plaster is not sufficient to support such a thin model. If the model could be made thick enough it would withstand the pressure without giving way. The flasks should be at least 3-4 inches deeper than they are.

In connection with packing the flask another thing might be mentioned. We usually close them in boiling water and put in so much rubber that we cannot possibly get the flask together, and then we boil for ten or twenty minutes to get the vulcanite to flow away in order to get the flask together.

This boiling of the plaster must disintegrate it and destroy its integrity.

In the matter of cutting gateways in the investment we often make a mistake. The ordinary method of simply cutting grooves from the matrix to the rim of the flask is a mistake. A better plan is the method advocated by Dr. Snow, which is to cut a groove in the plaster investment all the way around the flask at its outer edge, cutting it deep towards the flask and bevelling it to the edge of the matrix so that as the flask goes together there is plenty of space for all the excess of vulcanite to flow out, but when the flask is entirely closed the two edges of the investment come in contact and no more of the vulcanite can escape. During the process of heating the vulcanite swells and expends until you get to the vulcanizing point where it begins to carbonize and harden, and then it begins to shrink upon itself. If you have gateways that carry off the excess of vulcanite it never gets any pressure, because the vulcanite flows away and never gets back into the matrix, and as the vulcanite in the mold shrinks, it draws away from the model or from the teeth, leaving spaces about the teeth.

In this form of investment we should use the Donham Spring Clamp to hold the flasks together, as the pressure, of course, must be enormous if we use the ordinary bolts for holding the flask together. As the vulcanite swells in the process of heating these springs allow the flask to open, and as it hardens it comes back together. In this way we get the vulcanite hardened in the most perfect manner, and avoid its shrinking away from the teeth. We should vulcanize all rubber under spring pressure and get rid of the enormous pressure that we would otherwise subject the plaster mould to if we have only the bolts and screws. We do not pack vulcanite with the care we should. We do not even go to the

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trouble of warming the flask and we cut great strips of vulcanite and put them in the flask cold, and try to screw them together in boiling water and expect to get good results. It is remarkable that we get as good results as we do from this slovenly method. The fact that we get any desirable results from the process, it seems to me, is a great compliment to the vulcanite, demonstrating that it is an exceedingly tractable material and can withstand a great amount of abuse without resenting it.

If we would take more pains we should get more sanitary plates, and I have no doubt that we should be surprised that our vulcanite plates fit so much better than they did when we did not take into account these methods. A large number of dentists make vulcanite plates, probably many more of them than of any other kind. We ought to make them in the best possible manner or not at all. Because they can be made so easily they are often done by the office boy or some equally inexperienced or unintelligent person. It is entirely unprofessional for us not to study the details of this work and do it as it should be done.—*Dental Register.*

## COMMON SENSE PERTAINING TO PYORRHŒA.

In a study of pyorrhœa we must not let it become confused with the condition caused by salivary calculus, for if we do, we will cure much pyorrhea. In salivary gingivitis the calculus retains particles of food and bacteria, causing irritation and inflammation which results in hypertrophy of the gum tissue, causing much soreness, hemorrhage and annoyance to the patient; this condition is readily cured by the thorough cleansing of the teeth at several sittings, together with excising all hypertrophied tissue, massaging with the fingers and a good astringent mouth-wash. But the cases to which I wish to call your attention are those where the gum is not hypertrophied and plethoric, but the tissue looks anæmic and has a bluish cast and always a tendency to recession at the gingival. You press the tissue from the apex of the root toward the crown of the tooth, and out comes a slimy light coloured mucus and very often pus. This is typical pyorrhœa in my opinion, and when I strike such a case, my sympathy goes out to the physician when he makes the diagnosis

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of the case of some friend and realizes that he is helpless. This is my feeling in such cases as I hang my head and put up as bold a front as possible and begin a treatment that I know will only put off the evil day. The cause of pyorrhœa has never been definitely settled, but is usually considered to be caused by the deposits on the roots of the teeth. Some claim that the deposits are caused by uric acid in the blood; the ignorance of the medical world is often hidden behind this theory of uric acid and I am afraid that we also are finding a hiding place. Others claim that it is first caused by salivary calculus and that often this passes below the gum, causing food and bacteria to set up an irritation and then the blood begins to deposit lime salts. I believe that our greatest trouble comes from forcing blood and bacteria into the loose pockets, setting up an irritation; for I have noticed that the trouble is very much helped upon a tooth to which a bridge is fastened, and I have seen the pockets of teeth partially loose from pyorrhœa entirely disappear after a bridge has been anchored to them. This may be due to the stable condition, but I believe that it is largly due to the protection from packing of food in the pockets. The remedy is the entire removal of the deposits either by medication or instrumentation and I do not have much faith in medication. Our last hope is to remove the deposits with scalers thoroughly, and I must admit to you that in that I am a failure; for clean as well as I can, even with good patients I frequently have to extract, and then to find deposits all over the roots that I did not reach, and this is especially true on molar roots.—BUSH JONES, D.D.S., in *Texas Dental Journal*.

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## SOME REMARKS ON THE PREVENTION OF APPENDICITIS.

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By W. J. TYSON, M.D., F.R.C.P., F.R.C.S.,
*Honorary Physician, Victoria Hospital, Folkestone.*

I THINK there can be little doubt that appendicitis has much increased of late years. Although many years ago cases of appendicitis were almost invariably put down as peritonitis, yet these peritonitic cases were less numerous

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than we meet with to-day. The type of case, I believe, has also changed, as in many other diseases, for the so-called simple or medical cases we see less frequently than we used to.

I believe that the most prominent and active cause of appendicitis is constipation, a lodgement of undigested matter, or faecal masses, in the bowel.

Now, there are a good many conditions, which have increased of late years, which are more or less associated with constipation, directly or indirectly, such as oral sepis, excessive and unnatural eating (as seen in our modern hotels), unsuitable foods, alcoholism in its various forms, weakened abdominal muscles, wrong methods of stooling; each of these require some notice.

Dr. Tyson then quotes Treves as follows :—

Defective masticating teeth are exceedingly common among the subjects of the disease, and especially among those who have passed the period of youth. Over and over again it would appear as if the want of proper and efficient teeth had been the direct cause of the attacks. Such patients often bolt their food, and such meat as they eat can hardly reach the stomach in a condition fit for complete digestion. The bolus passes into the bowel still ill-digested. It fails to stimulate normal peristalsis; it is prone to lodge in the great receptacle, the caecum, where it decomposes, and, if there be any existing lesion of the appendix, must tend to encourage the morbid change.

In connection with this question of the teeth, I have often wondered why dentists have not paid more attention to the prevention of decay. Surely something might be done to prevent the almost universal decay of the teeth that we now witness in all classes of the community, and at all ages. We are always hearing of the bad results, and in some cases apparently very serious consequences of oral sepsis, and yet stopping the teeth, or their extraction, seems at present the only remedy, forgetting that no artificial substitutes in the mouth can fully take the place of sound teeth naturally fixed. In the coloured races it must be noted that their teeth are perfect; they do not hurry over their meals, and they rest after them—how different from the scene often witnessed of a man or woman bolting food and reading a newspaper.

I also might refer at this stage of my paper to the present faulty mastication which now necessarily takes place with the soft artificial foods which are in vogue. This has been prominently brought forward and constantly urged by Dr. Harry Campbell. The full significance and the evil result-

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ing from the mode of feeding, primarily on stomach and intestinal digestion, and secondarily on the general system of the child, is not to-day fully appreciated.

Coming on now to the question of food, there can be little doubt that a great change has come about in our methods of eating, also in the quality and quantity of food we take. Personally, I cannot help thinking, and many hold this opinion, that the enormous amount of iced food, in the shape of meat, fish, game, etc., which are now taken, plays an important part in many of our intestinal troubles. The above custom seems at present a necessity, and it seems little use to say very much about it. Yet for a long time I have thought that there are decided dangers connected with the iced food traffic.

Then again, as a rule, I think that nearly all of us are eating too much, too quickly, and not taking sufficient rest after the meals. It is not a fair argument te say that our ancestors ate as much, for it must always be remembered that they lived and exercised much in the open and fresh air; whilst many people to-day who eat most take little or no exercise. Again, the modern *table d'hôte* dinner, as taken by the well-to-do people, is not favourable for peace and quietness among the contents of the digestive canal, nor can the present state of the knowledge of cookery among the poorer classes be considered conducive to their well-being. When the question of feeding is more carefully and systematically considered, I believe that it will be found that it plays an important part in intestinal inflammation; also, apart from the quality and quantity of the food taken, irregularity of eating tends to set up gastric and intestinal irritation, and conceivably inflammatory conditions, such as appendicitis. Commercial travellers seem more liable to the foregoing conditions than other people.

**When proper mastication of food, preservation of teeth simple feeding at regular intervals, and at quiet times, are properly taught in our schools and practised in our houses, we may then hope to see a marked diminution in the number of cases of appendicitis, which are now so appallingly common. Somebody has pithily said that man has neither a crop like a bird, nor a caecum like a horse, so that he has no provision made for bolting his food.—*British Medical Journal.***

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# FAILURES IN BRIDGE WORK.

By Hart J. Goslee, D.D.S.

Dynamics.—As applied to bridge-work, one of the chief causes of failures is the woeful display of ignorance concerning the fundamental principles of mechanics and the utter disregard of the laws of dynamics, which is so frequently evidenced.

As a result, fixed bridges are too often constructed for cases where a removable type of fixture is indicated; pieces which are entirely too extensive for the number and stability of the supporting teeth are inserted, and adequate strength to sustain the ravages of continued masticatory work frequently does not obtain, either in the form of attachment used or in the final assemblage of the parts, or both.

Fixed Bridges.—The tendency to place fixed bridge-work any and everywhere, irrespective of the type of attachment used, and of the number and stability of supporting teeth, is also entirely too common. This class of work is successful only in proportion as it may be inherently strong and judiciously applied, and because of the dynamic requirements, it will be found that "judicious application" will apply far more often to small pieces of from two to five or six teeth than to those in which a greater number are involved.

Large Fixtures,—In view of the numerous attachments for supporting removable fixtures which are practicable, and which may be used successfully, a larger proportion of the extensive cases should more frequently be made in this manner. If they were, fewer failures would be recorded; fewer good, sound teeth would be ruthlessly destroyed, and far more hygienic results would be obtained.

Saddle Bridges.—In order to insert fixed structures in cases where it is evident that the support is inadequate, an effort to more closely observe the dynamic requirements by increasing the resistance of the piece to stress is frequently made by using a "saddle."

While this type of construction may be successfully used under very favourable conditions, it often proves a failure,

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however, from a hygienic aspect, if not from a mechanical viewpoint.

But as both of these features are essential elements of success, they must be combined, and to be thus obtained they can only result from confining the application of a saddle to such cases as offer opportunity for a good, close adaptation to well-absorbed tissues, and for an adequate and more or less unyielding support at each end, and even then the application should be made mainly for the purpose of affording opportunity for restoration of lost tissue.

EXTENSION BRIDGES.—Another common practice which often leads to failure is that of suspending one or more teeth beyond the abutment, or abutments, without sufficient support, or without some mechanical provision against leverage. Generally speaking, such a principal is mechanically wrong to begin with, and such cases can only be successful in proportion as the resistance of the supporting tooth is adequate to overcome the power of the lever, and to thus sustain all of the stress assumed by the suspended tooth, or teeth, in every direction.

PORCELAIN BRIDGEWORK.—The injudicious and indiscriminate use of porcelain in the construction particularly of "fixed" bridgework is also the cause of many failures. In this connection it must be remembered that porcelain is a friable material, and hence cannot be relied upon as offering sufficient resistance to the more or less powerful stress of mastication unless it may be of such bulk as to possess inherent strength, and then so supported and protected by the mental substructure as to insure its integrity. And, again, granting that the application may be judiciously made, and the metal substructure physically adequate, failures often result from over-fusing the body or from using a surplus of pure gold as a solder.

REMOVABLE BRIDGES.—While fewer "fixed" bridges and more "removable" ones would insure a greater proportion of successes than is now generally obtained, yet failures even in this type of construction are by no means rare.

These are due largely to a failure to obtain adequate strength in our attachment used to support the structure, and this in turn is due mainly to the use of such attachments as are manufactured for this purpose, many forms of which are built more upon the lines of beauty and delicacy than upon those of inherent strength.

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ARTICULATION AND OCCLUSION.—Faulty articulation and occlusion is probably the next most common cause of failures in this class of work, and one which can only be attributed to indifference on the part of the operator, because the requirements are definite and positive.

In this connection, if fewer modelling compound impressions were used, and better models obtained, and if our work were constructed on articulators, such as afford a lateral movement, and the adjustment in the mouth then more carefully observed before dismissing the patient, greater usefulness and a much smaller proportion of failures in the form of fractured facings and broken or loosened fixtures would result.

The proportion of these and of all of the various other forms of failures which can be attributed to faulty technique could be greatly reduced if we would but take more interest, exercise more care, and spend more time in observing details.

ECONOMY OF TIME.—The intuitive tendency, and even eagerness, which is manifested by so many to economize time by "cutting corners" and using so-called "time-saving" methods is largely responsible for the failures which are to be attributed to this common cause, for the reason that the advantages gained are usually doubtful, and often fallacious.

Any effort to save time is laudable, and to be commended —providing it is consistent and conscientious; and the adoption of methods and "systems" which will aid in accomplishing such an object is always warrantable—providing they prove to be practicable; but we must never lose sight of the fact that "short cuts" are often a dangerous experiment, and that to gain time at the possible expense of results is false economy.

THE CAUSES OF SUCCESS.—To be successful, what shall we do? Mainly this: Acquire skill; cultivate system; be conscientiously painstaking and scrupulously observant of details. Ascertain the causes of failures and endeavour to avoid them. Take sufficient time first to plan and then to outline how the work can best be done, and then do it properly, and undertake nothing until you are first familiar with it.—*The Summary.*

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# THE INCISOR TEETH OF THE PITCAIRN ISLANDERS.

DR. KINGSTON BARTON writes as follows to the *Lancet*:—"In the *Lancet* of April 4th, 1903, you were good enough to publish some interesting communications on the subject of the peculiar defect in the incisor noticed in most incisor teeth of the Pitcairne Islanders. Mr. C. S. Tomes assisted me in drawing up a series of questions to be answered by the medical officer of His Majesty's ship that made the usual triennial visit to that island. I have just received a further report from the Admiralty, which may interest yonr readers. But so far no elucidation has been thrown upon the probable causes of this peculiar defect in the incisor teeth.

Mr. Tomes writes me concerning this recent report:—

I wonder if they suck any acid fruits with their front teeth. I remember a case of extreme hysteria in which the patient sucked lemons all day and took little else for a time, in which there was very marked thinning of the enamel of all the front teeth; it was almost gone but there was no caries. If, as the islanders appear to think, the loss of the teeth is a comparatively new thing of more or less sudden origin (*vide* the tooth-brush theory). it hardly looks like an inherited degeneration. On the other hand, one knows how ready even educated people are to find a cause by no means always a *vera causa*, for their ailments, and one cannot quite trust the statement that their loss of teeth is a new thing without more evidence.

Admiralty report by Staff-Surgeon Lobb, H.M.S. *Torch*:—

The teeth are uniformly very bad; a few have perfect sets but the majority are badly deficient. Both sexes are affected, possibly equally. It seems more pronounced among the women, though this may be due to the fact that in the men the moustache partly conceals the mouth. The incisors are mostly attacked and those of the upper jaw more than those of the lower. Sometimes the two central incisors, sometimes the two lateral, and sometimes the whole four are wanting. The canines are mostly present, but often rounded off, giving to many of even the young women a "toothless hag" appearance. Although the incisors only have so far been mentioned owing to their being the most striking, the other teeth may or may not be decayed or absent. In many examined the remaining teeth were perfectly sound; in others practically all the teeth were decayed or absent. The enamel of all the teeth appeared thin and delicate. In one case in which only the two upper lateral incisors were missing from an otherwise perfect though delicate set the loss was attributed to the practice of husking cocoanuts. Possibly a few other cases may be of similar origin but the universal prevalence precludes the possibility of this being the general cause, nor is this idea entertained by themselves. Local opinion throws the blame on the missionaries for introducing brushing the teeth, before which the islanders state that they had very good

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teeth Others, again, consider the food of the Seventh Day Adventists, consisting as it does chiefly of soft material with a minimum of meat responsible, whilst yet others attribute the wedging of fibres and seeds of fruit between the teeth as the cause. Both these factors are at work in other islands where the diet is similar and yet the teeth are uniformly good—at any rate, away from the towns.

Judging from the delicacy of the enamel noticed it is possible that some of the salts necessary for its building up are absent from the soil of the island or more probable still, that some solvent is present either in the soil or water. Time did not permit of any investigation in this direction and a solution of this peculiarity does not present itself.

From the foregoing it is evident that there is still an absence of any reasonable hypothesis explaining the cause of the condition."

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## BANDLESS CROWNS.

By W. F. Lorenze, D.D.S., St. Louis, Mo.

That the bandless crown has merits of superiority over the full-banded type, in the matter of least disturbance to the contiguous soft tissues when mounted, no practitioner will deny who has made observations of the various forms of crowns that present themselves in general practice. We are forcibly reminded of this fact when we consider the countless number of ready-made crowns, such as the Logan, Davis, Justi and others that have been in years past applied to roots of teeth; it is the exception to find any marked recession of gums, gingivitis or so-called pyorrhœal pockets about the sides of roots so crowned. The poor fits of this style of manufactured crowns often show no signs of these various ill conditions; this cannot be said of the full-banded or Richmond design, which type is very much in the minority in point of numbers in use. The so-called good fits of the full-banded Richmond crown are seldom seen without receded or congested gingival margins in varying degrees, after a few years of use. We have, therefore, abundant clinical evidence that the six or eight anterior roots will scarcely tolerate any metallic impingement without showing an abnormal condition at the cervical margin—particularly so at the labial and buccal aspect. This is undoubtedly due to thinness or lack of vascularity at that point to overcome the constant irritation.

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It is not to be inferred from the foregoing deductions that the full-banded or Richmond crown should be entirely discarded for the bandless or the half-band design; not at all, the skilled, painstaking operator will employ the Richmond crown when his judgment so dictates; he will then give the root proper preparation, so that he can adapt a close-fitting festooned band that reaches just under the free margin of the gingivæ. As a bridge abutment, the Richmond crown has decided advantages over the bandless.

In the matter of close-fitting joints, all ready-made crowns show to best advantage when applied to roots that are whole; in other words, roots in which the ravages of decay have not reached beyond the cervical margin. Authorities tell us that teeth that are condemned to the final resort of crowning are in that dilapidated condition in which filling or inlaying would be futile, barring, of course, such cases as discoloured or ill-shaped natural crowns that are sacrificed for artificial ones. The use of the Richmond crown is contra-indicated in these badly broken-down teeth, where the decay has reached deeply root-wise on one or both approximating sides—to employ a full band here would be certain to invite some of the ill conditions referred to. It is in these trying cases that the Logan, Davis and other makes have proved unsatisfactory, as it is indeed a physical impossibility to grind a close-fitting joint between root and crown. Happily, the recent invention of the Roach mouldable porcelain has provided a means to overcome this deficiency. After the root face has been trimmed to as regular a surface as possible, with the labial and lingual surfaces dressed down to a point below the gum margin, and crown also ground to an approximating form, the root face and canal are smeared with vaseline, the mouldable porcelain is mixed to a stiff paste, similar to oxy-phosphate cement, a sufficient mass is applied to crown around the post, the crown is now pressed to place on root, and in a short time the material is set hard, crown is removed, and a perfect impression of the irregular root face should result. The excess is trimmed away, the crown is placed in a furnace and the material baked to crown, with but slight shrinkage, resulting in a well-adapted and close-fitting joint. The silicate cements suggests a similar usefulness; these cements set hard and rapidly, and mould readily, and have the advantage of not requiring baking, provided the test of time verifies the claims of their manufacturers.

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Another inherent weakness of the Logan crown is the lack of rigidity of the dowel; this can also be materially improved by applying 16 to 18k. solder to the lateral sides of the post, a procedure that will obviate many failures.

It is readily conceded that it is more simple, rapid and certain of results to adapt a metallic diaphragm to the root face than to grind porcelain to approximate such irregular surfaces. The generally accepted methods of burnishing, malleting or swaging gold or platinum to the root face have not been productive of absolute results. The burnishing method results frequently in severely wounding the surrounding soft parts, occasioned by the tendency of the burnisher to slip off, the resulting hemorrhage often impeding further progress. After complete adaption it is a matter of guesswork as to trimming the diaphragm to the exact peripheral root outline. The malleting process, while obviating the tendency to slip, has the weakness of requiring frequent annealing of the diaphragm, platinum especially tempering or stiffening readily under blows, this causing the diaphragm to pull away from root face in malleting. The consequent jar and shock ofttimes are very trying to the patient. . To obtain the exact peripheral outline also is uncertain. The swaging method, while overcoming some of these objections, is not popular, because of its requiring an unusual amount of time in the endeavour to obtain a close adaptation, and a correct peripheral outline is not always the reward, due to the many changes of impressions, models, dies and counter-dies, in the end obliterating all marginal lines to guide one in obtaining exact dimensions.

A method that has given the writer more uniform results than those referred to is that of employing a gold plugger point of special form, placed in a large cone socked handle. The face of the plugger is large and round, with deep and sharp serrations. In place of burnishing or malleting, strong and direct hand pressure is employed in forcing the diaphragm to close adaptation directly from the root. Hand pressure diminishes materially the tendency of the metal to stiffen, as in burnishing or malleting; the jar is obviated and the tendency to slip off is entirely overcome on account of the serrations of the plugger taking a firm hold of the metal, so that one can press firmly on the root periphery without fear of slipping. This results in a well-defined line to which the excess metal is trimmed. No difficulty will be encountered in this forcing

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diaphragm to the very irregular root faces in cases of badly decayed roots. In order to facilitate this part of the work it is advisable in all bandless crowns, after the root face has been shaped, to force aside all overlapping soft tissues. This is best done by utilizing old posts and soldering thereto a disk made of scrap crown gold. These tacks, in various sizes, are quickly sterilized in the flame and are used over and over again. A mass of gutta-percha or stopping is packed about the post, and the same pressed to place on the root; the metal disk or diaphragm is forced towards the root face, crowding ahead the mass of gutta-percha, which forces aside all overhanging soft tissues; this pressure is maintained by the tack holding and confining the gutta-percha in place. At next sitting all surfaces of the root should be clearly exposed. After an irridio-platinum dowel of proper gauge and length has been fitted to the canal and the metal disk soldered thereon, the diaphragm is forced to place with the plugger by first starting at the centre about the projecting dowel, then gradually working towards the periphery, at which point the endeavour is made to get a sharp indented line of the root margin on the metal diaphragm, which will be clearly defined on the opposite side, to which line all excess metal is trimmed away, annealing the metal again, and adapting the diahpragm with the instrument to place at all points of the root; an absolutely perfect fit should result.

If half-band construction is desired, the same details are carried out, except that the lingual half of root is ground flat to within one-sixteenth or one-thirty-second of an inch of the gum margin, according to the bite, and the metal disk is cut larger at the lingual half, which excess is to be lapped over and forms the half band. As in the bandless method, the diaphragm is forced to place on the root and the peripheral outline obtained. The labial half of the diaphragm is trimmed to the indented line, the lingual half is left extended beyond this line sufficient to form the half band. With the shears small cuts are made exactly to this line, the cuts about one-eighth to one-sixteenth of an inch apart, the metal is again annealed and pressed to place on root. The extension of metal at the lingual half is then turned or lapped over the root end with burnisher and the instrument (with the lip attached). The half band is quickly formed, the cuts allowing the metal to circle the root side by burnishing, and a snug fit of the band is assured. This half band is then sufficiently



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stiffened with solder. If a porcelain crown, twenty-five per cent. platinum solder is demanded; if for a Richmond crown, 20k. solder is used. When completed we have the diaphragm and half band composed of one piece of metal. For a baked porcelain crown the platinum diaphragm must be soldered to the dowel with twenty-five per cent. platinum solder; if a Richmond crown is designed, 22k. solder is preferred, and after diaphragm of either bandless or half band is completely adapted and trimmed, the pure gold diaphragm of thirty gauge should be reinforced with 20k. solder so as to prevent any warping in the final soldering. After completion of the metal base a bite and plaster impression of the parts are taken and the case finished in the usual manner.—*Dental Brief.*

## DENTAL MEDICINES.

By A. E. Webster, M.D., D.D.S.

The subject of dental medicine is too large a one to be taken up at a single meeting, so I shall attempt the discussion of only those parts of the subject which have been given special attention during the past few years.

. . . . . .

The surgeon requires anæsthetics both general and local, and the use of these drugs demands the use of their antidotes. Let us consider local anæsthetics only. The dental surgeon's knowledge of anæsthetics, and especially local anæsthetics, should be as thorough as possible, because nearly all surgery is more or less painful.

Extraction under local anæsthetics has practically reduced itself to refrigeration and hypodermic injection. Ethyl chloride spray and ether spray are two of the most useful drugs for refrigeration. Their application is simple and their efficacy marked in some cases. It is to be noted that especially in the use of ethyl chloride spray, the vapors may be allowed to pass before the patient's nostrils, and thus produce a general anæsthesia. The operator must be prepared for such a consequence and in fact take advantage of it. The marked results from local refrigeration from ethyl chloride spray are more often due to the general effect than to the local.

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Ethyl chloride spray is useful in hyper-sensitive dentine and the devitalization of pulps. The most effective way to use cold on a sensitive cavity is first to begin with a continuous blast of cold air from a compressed air tank, and as sensation to this subsides, the spray may be directed upon the isolated tooth. If the cavity be deep or of great area, it should be filled with dry cotton before the spray is applied. Most sensitive labial and buccal cavities may be controlled by this means. There is always some danger of setting up such a congestion in the pulp that it may not recover. Ethyl chloride spray on an anterior tooth where the pulp is partly dead and painful to touch will work wonders, or if the pulp is to be removed from a sound tooth ethyl chloride will desensitize the dentine and the cocaine pressure method may be used on the pulp when it is reached.

Cocaine or some of its derivatives (or synthetic preparations eliminating the toxic elements) stands to-day as the only efficient local anæsthetic, for injection. Cocaine stands at the head of the list in efficiency, but with this comes its pronounced toxicity. Many deaths have been recorded from the injection of cocaine, and to overcome this objection eucaine, stovaine and novocaine have been substituted. These latter are much less efficient, but are from three to six times less toxic. Cocaine has been used as high as ten per cent. for injection, but in recent years two per cent. is most commonly used. A recent means of reducing the toxicity of cocaine and also increasing its efficiency with the same quantity of the drug is to add adrenalin chloride. It is claimed that the adrenalin chloride contracts the arterioles, and thus prevents the cocaine from being rapidly carried into the general circulation. Besides, the duration of the anæsthesia is prolonged. If three or four drops of a 1 to 1,000 adrenalin chloride solution be added to 20 to 30 drops of a two per cent. solution of novocaine, the least toxic of these anæsthetics, and injected into the tissues about the apex of a tooth or deeply into the interproximal space on each side, there will be such a profound effect on the pulp and dentine of the tooth that the dentine may be cut or the pulp removed without pain. This method of treating sensitive dentine is very satisfactory in trimming a tooth with a living pulp for the reception of a jacket crown. Personally, I have found great satisfaction where I thought the operation demanded the responsibilities of the injection. Cocaine injected into the

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dentine of a tooth with a powerful syringe gives certain results both on the dentine and on the pulp. It has been more recently shown by Tuller and Miller that the force required to produce local anæsthesia of the dentine need not be so great as that produced from a syringe. Tuller of Chicago has been using for some time rubber cups, in which is placed the solution of cocaine, and this placed over the tooth with the exposed dentine and pressed, thus confining the cocaine and gradually forcing it into the dentine. He has been able to grind down teeth for crowns without pain. Miller recently suggested taking an impression of a sensitive cavity in compound, and then putting a solution of cocaine into the cavity and over the impression place rubber dam and with this squeeze the cocaine into the dentine. Cocaine solutions pressed into exposed pulps bring about certain anæsthesia. The method is well known to all, but there is a danger in its use, that has caused some anxiety to the operator and discomfort to the patient. If an excessive amount of the drug be forced into the tissues, general toxic effects may supervene, or local paralysis of the area of the distribution of the nerves. These local paralyses soon pass away, but there is such a profound intoxication of the tissues at the apex that they do not recover vitality, and the tooth becomes sore to touch, and may take weeks to recover. If the pulp is infected, as often occurs, or has a local pus formation on its horns, and cocaine pressure is used, the pus may be forced through the apex and a severe pericementitis set up. It is better to use phenol as an anæsthetic in all infected cases, either alone or with cocaine.

Authorities seem to agree that it is impossible to know whether a given patient will bear cocaine well or not. A patient who bears cocaine well to-day may succumb to it to-morrow. It has been noted that patients who have been worried, sleepless and hungry bear cocaine but poorly. Some operators will not inject cocaine unless the patient has his regular meals and has not been recently overwrought. Coffee given shortly before an injection is said to be of great advantage. Volusum is said to be a specific for the toxicity of cocaine.

There are a few local anæsthetics which are used in the relief of sensitive dentine which have recognised value. Among these are phenol, oil of cloves, campho-phenique, thymo-phyonique and thymol. These drugs relieve the pain

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in a tooth with recently exposed dentine much the same way that linseed oil relieves the pain of a burn or an abraded skin. It protects the exposed nerve filaments from stimulation by the air or by cold. If many sensitive cavities appear in the same mouth their sensitivity may be much relieved by removing the loose decay and washing them out with a stream of tepid water and inserting a filling of equal parts of zinc oxide and thymol crystals, using as a liquid, zinc sulphate solution. This is one of the most satisfactory materials for holding dressing in cavities that we possess. Dr. Harold Clark suggests using the commercial zinc oxide and five drops of a saturated solution of boracic acid to the ounce to control the rapidity of setting. The zinc sulphate and oxide will set so rapidly that it is useless, but when boracic acid solution is added to the sulphate solution it may be gauged to set at any desired rapidity. The cement is clean, easy to handle, sets hard enough to last even weeks, has an antiseptic and non-irritating property, and is easily removed.

Phenol will relieve sensitive dentine in shallow cavities by heating it. If a pledget of cotton saturated with phenol is placed in the cavity and a large hot instrument placed against it several times, the tissue will be less sensitive to cut. The instrument should be hot enough to make the moist cotton sizzle. Not infrequently root canals are sensitive, even though the pulp be all dead and removed. This sensation comes from prolongation of nerves from the pericemental membrane to the pulp cavity. Many such sensitive root canals are sometimes found in the same patient. I have often mistaken the condition for remaining vitality of the pulp and applied more arsenic, only to find the sensitiveness remaining, or complete destruction of the pericemental membrane. I have tried sulphuric acid, nitric acid, zinc chloride with doubtful results, but have found success with one application of phenol after failure with other agents. In this connection it might not be out of place to discuss cauterants, which are used to destroy or digest remaining pulp tissues in a root canal. These agents can hardly be called anæsthetics, but their discussion may come in satisfactorily just now.

During the past year the Odontological Club of Toronto conducted some experiments to illustrate as far as possibte the relative efficacy of many of the agents used to digest pulp tissue. In two or three series of experiments beef fascia was stretched over a glass jar and the agents dropped

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upon the membrane, and the time compared that each took to penetrate the tissue. This same experiment was repeated, with the addition of gently rubbing the tissue with a smooth instrument. These experiments showed by both methods that sulphuric acid and nitric acid were the most penetrating. Glass tubes were packed tightly with beef and an equal number of drops of phenol, sulphuric acid, nitric acid zinc chloride, silver nitrate, hydrochloric acid, formaldehyd, and trikresol, caustic soda, caustic potash, potassium chromate dropped into each. After making many tests it was found that sulphuric acid and nitric acid were about equal, silver nitrate, hydrochloric acid, zinc chloride, potassium chromate and phenol came in about the order mentioned. It would seem from our experiments that either sulphuric acid or nitric acid will most readily penetrate dead pulp tissue in a fine root canal. Other cauterants seem to either lose their penetrating power sooner or hinder their own permeation by a coagulum.

Another series of experiments was conducted to find out, if possible, what agents were the most effective in relieving sensitive necks of teeth. While this work was not completed, it would seem to indicate that those agents are most efficient which do not dissolve the tooth tissue. Among these are silver nitrate and strong solutions of formaldehyd. The alkalies were slow in action and the effect of short duration.

Another feature of dental medicine has been overdone. We have taught the public that decay of teeth is caused by micro-organisms. Manufacturers, taking advantage of this statement, have made barrels of mouth washes, which they claim to be disinfectants or antiseptics. We know that the public are being taught to depend on these nostrums to prevent decay of the teeth, instead of upon mechanical cleanliness. As this subject was before the society once before this year, I need not say no more.

You have asked me to discuss dental medicines, and I fear I have shown the usefulness of but a few, and combated them as a whole.—*Dominion Dental Journal.*

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# Dental News.

## ROYAL DENTAL HOSPITAL OF LONDON.

THE ANNUAL DINNER of the staff and past and present students of the Royal Dental Hospital of London was held at the Hotel Metropole, on November 23rd, Mr. E. Lloyd-Williams occupying the chair. There was a capital attendance and a feature of the speeches was the expression of loyalty to their hospital evinced on the part of those speakers connected either in the past or the present with the institution. In proposing the toast of "The Past and Present Students" Mr. Lloyd-Williams gave an interesting retrospect of the dental student's career and pointed out the strenuous efforts now required by the capable dental surgeon if he would fit himself for his profession. He announced that a dental section had been formed of the Royal Society of Medicine. Referring to the mechanical work of the dental surgeon he said that this involved skill just as much as any other part of his work. He urged upon the students to acquire all the knowledge that they could and not just that "smattering" which would enable them to "scrape through" their examinations, and he asked them in their practice to treat rich and poor alike with the same consideration. In responding to this toast Mr. G. E. Macdonald, for the past students, said that he and his colleagues were always grateful for the excellent training which they received at the hospital. Mr. W. Thew, a present student, expressed himself in similar terms. Mr. F. G. Hallett, in proposing the toast of "The Hospital and School," referred to the excellent equipments of the school and the teaching capacity of the staff. He said that much of the success of the hospital and school could be attributed to their careful selection in the past of the deans whose influence and work had made for progress. Mr. R. Winch, a governor of the hospital, responded to the toast and endorsed every word that Mr. Hallett had spoken. He urged the student to support his hospital and concluded by suggesting that the insurance offices might help, for nothing was more certain than that life was prolonged if attention was given to the teeth. The dean, Mr. J. F. Colyer, briefly reviewed the progress of the school. He referred to the fact that they had recently appointed a clinical pathologist to deal with clinical matters

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and their hope was that soon an X-ray department would be inaugurated. The post graduate course was well attended. They proposed shortly to publish a hospital gazette to be issued in quarterly numbers. The present year, he thought, saw in the school and hospital a more efficient teaching machine than before. Mr. J. G. Turner proposed the toast of the "Visitors," to which Dr. J. Galloway replied, referring to the excellent financial support which, as a rule, the provincial schools received from local people. He congratulated them upon their success and heartily wished them continued prosperity. Mr. Morton A. Smale proposed "The Chairman," who expressed his appreciation of the cordiality with which the toast was received. A musical programme added to the enjoyment of the proceedings.

## ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

During the November Examinations the following gentlemen passed the First Dental Examination :— John Henry Marshall Scott, Coldstream; John Storey, Cumberland; Stanley Tyrrell Mackay, Somerset; Friedrich Robert Martin Lenner, Hainewalde; Robert Cumming, Edinburgh; Richardson Alexander Broughton Stilley, Londonderry, and Fisher Thomas Gowans, Edinburgh, and the following gentlemen passed the Second Dental Examination and were admitted Licentiates in Dental Surgery:— William Ernest Jones, Timaru, N.Z.; Andrew Johnstone Brown, Edinburgh; William Edward Meredith, Waterford; John Bell Milne, Edinburgh; Mervyn Arthur Holland, Brisbane; Evan McGregor Shepherd, Dundee, and Stuart Lunn, Edinburgh.

## MUNICIPAL DENTISTRY.

### Experiments in Cambridge Schools.

An interesting experiment in school dentistry has been started in Cambridge. The Board of Education authorises payment for inspection of the teeth of scholars, but it does not empower an educational authority to pay a skilled dentist to treat the defective teeth. This further step has been taken in Cambridge, through the advocacy of Dr. George Cunning-

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ham, backed by the philanthropy of Mr. Sedley Taylor, the active support of Dr. J. H. C. Dalton and others, and the approval of the Town Council. The scheme, having attracted the attention of the Government, Dr. Eichholz (of the Medical Department of the Board of Education) paid a visit to the Dental Institute last Friday, when it was thrown open for public inspection. A representative meeting was held at the Guildhall in the evening, when an explanation was given of the experiment in which Cambridge is giving a lead to all the educational authorities in the country.

The Mayor (Mr. H. G. Whibley) said it was through the generosity of Mr. Sedley Taylor that they were able to do the work. That gentleman promised £500 to the Dental Committee, in order to employ a qualified dentist whose whole services were to be acquired to look after the work. The Governors of Addenbrooke's Hospital had placed a room at their disposal for extractions, under an anæsthetic if desirable. Nothing was done to any child without the consent of the parents.

Dr. George Cunningham, Honorary Director of the Dental Institute, said that during the past four months 756 children had been examined. A total of 3,156 temporary teeth and 1,273 permanent teeth were found to be diseased. Only 27 of these children were without decayed teeth. Many of the teeth were decayed beyond all hope of repair, but they had saved by filling 272 temporary and 510 permanent teeth. Were it possible to secure attendance between the ages of five and seven, and they were all tractable, they could certainly save all the permanent teeth. He was struck by the fact that the tooth brush was almost an unknown quantity.

The Master of Downing (Professor Howard Marsh), who proposed a motion affirming that children attending elementary schools urgently needed professional dental treatment of a preservative character, said he considered this movement one of the highest possible importance. He believed it would be of great benefit; and Mr. Sedley Taylor had done a noble act in making the work possible.

The Chairman of Cambridgeshire County Council (Mr. Alderman Fordham), Rev. W. B. Selbie, Mr. Arthur Cooke, Professor Stanton, Mrs. C. D. Rackham, Mr. W. A. Rhodes, and Mr. Sedley Taylor also spoke, the latter remarking that too much had been said about his share in this matter.

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## MEDICAL PROTECTION SOCIETY.

In the report of the London and Counties Medical Protection Society the following instance of the work the Society takes in hand is given:—

"A member was asked to give ether for a patient to have teeth extracted by Mr.—. The member, doubting if he was qualified, wrote io Mr.— asking if he was registered as a dentist. Mr.— admitted that he was not registered or qualified. The member then, very properly, declined to administer the anæsthetic. Mr. —replied to this intimation by saying that he could get many medical men in B— to administer the anæsthetic for him. Accordingly Mr.— obtained the assistance of the house surgren at a special hospital in B—, who was personally acquainted with Mr.—, and the house surgeon received a fee of half a guinea. This was reported to the Society, and the house surgeon was written to and informed of the charge against him, and told that he might make any statement he chose. In reply to this communication the house surgeon called at the Society's affices, and expressed great regret for what he had done, mentioning some mitigating circumstances. After the seriousness of his position in the matter was brought before the Medical Council had been fully explained to him, he was told that no further steps would be taken by this Society if he rigidly adheared to his promise not to do the like again."

## BIRMINGHAM DENTAL HOSPITAL.

The annual meeting of the governors of the Birmingham Dental Hospital was held recently, at the institution in Great Charles Street, under the presidency of Viscount Cobham.

The Hon. Secretary (Mr. H. Keeling) read the report, which said there had been a slight decrease in the numder of patients, but an increase in the total number of attendances. That indicated more attention to individual cases, and that was borne out by the great increase in inlays and fittings. The number of ordinary extractions had gone up, pointing to the continued increase of cases in which conservative operations had been impossible. That seemed to indicate a continuance of the alarming progressive decay of teeth to which the

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public seemed now to be liable. That view was corroborated by the results of the attention bestowed on the children in the elementary schools through the generosity of an anonymous benefactor. Of the 2,733 mouths charted during the year no fewer than 2,629, or 96 per cent., had required attention. That only 4 per cent. of the rising generation should have normal, healthy dentition was an ominous fact, as bearing on the future of the race. The number of extractions had been very great, while the timely relief given by the large number of fillings was calculated to diminish the sufferings of many future citizens. If all the children throughout the city suffered from abnormal teeth in the same proportion as those already examined, a great municipal question was apparent, with which it seemed impossible for voluntary charity such as theirs to cope, for about 16,000 children were born annually in Birmingham. Further experience of the new building confirmed first impressions of its suitability and efficiency. The increased expenditure incurred was partly due to the purchase of necessaries wholesale, which had hitherto been purchased retail, and partly to the iustallation of the telephone, insurance, etc. But the most rigorous oversight had been exercised over the expenditure of the hospital, and economies had been effected compatible with efficient administration. The amount of relief of suffering with which the hospital could deal, if supplied with funds, was much greater than that which had been given. It was their poverty and not their will which had compelled the committee to leave so many unrelieved whose condition would have been eased if there had been the necessary means. The statistics showed that during the year the number operations had been 24,039, as compared with 21,308 in the previous year. The number of new patients registered was 5,255, against 5,408, and this total number of attendances was 11,371, against 10,123.

The Chairman, in moving the adoption of the report, said he was glad the public support accorded the hospital during the year had in no wise slackened and that the committee had been enabled to do as much good work as they had done in past years. The number of operations had been pretty much the same as in the previous year, and relief had been given to sufferers in a very large number of cases. As the report indicated, the decay of teeth was proceeding in an alarming degree, and it was time attention was called to the subject. It was a matter of national importance, although

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at present it did not seem as though the public were awake to its seriousness. There could be no doubt that the general health and longevity of children was seriously affected in the absence of proper attention to the teeth. That was a matter that ought to be dinned into the ears of parents, because the real standard of the race was threatened, and unless some strong, drastic measures were taken it looked as though we were threatened with a progressive deterioration of the race. A large number of the children inspected in the elementary schools must have been born with an established tendency to dental deterioration, or else mismanagement of the children during infancy must have contributed to the state of things described in the report. Now the medical inspection of children in the elementary schools was provided for by Act of Parliament, he took it their teeth would also be examined That was a step in the right direction, but he did not know how far it was proposed to see that proper attention was given to the teeth when defects had been ascertained. He supposed that would be left to institutions like the Dental Hospital and to the dental departments of all the great hospitals. He was far from being a Socialist, but he thought that public money should be spent on the inspection of the children's teeth. If it was right to relieve parents of the responsibility of feeding their children—personally he did not think it was—they ought not to rely upon them to take care of the teeth of the children.

Lieutenant-General Phelps seconded the resolution, remarking that the systematic inspection of the teeth of the school children should be accompanied by careful charting.

The resolution was carried unanimously.—Viscount Cobham was re-elected president, Lord Calthorpe vice-president, and Mr. H. Keeling hon. treasurer and secretary, and other officers and the committee were also appointed.

## DENTIST AND SCHOOL CHILDREN'S TEETH.

Dr. W. E. Barker, Clitheroe's Medical Officer of Health, offers remarkable comments on a report presented by him to the local Educational Committee on Nov. 29th in which he deals with the condition of the teeth of the school children of the town. For this purpose of his examination he had taken

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150 scholars from the age of 8 to 13 years, haphazard from the various schools. The results were not very encouraging for of the whole 150 only three had what one might term perfect sets of teeth and 25 per cent. of them were passably clean, whilst not more than 5 per cent. were able to say they used a tooth brush. Those who did were mostly elder girls. Nearly 10 per cent. had irregular arrangements of teeth, and about a similar percentage had irregular formation of teeth.

Statistics seemed, added the Doctor, that in many children decay of some of the permanent set of teeth which should last a life time commenced almost with their very advent into the gums. There was a very prevalent opinion—probably quite justified by fact—that children's teeth nowadays decayed much more rapidly than a single generation ago various reasons were given amongst them being such incidents of advanced civilisation as overcrowding, increased nervous strain and an increased proportion of cooked and soft foods.

The fact that sweets were cheaper than they used to be and that the present generation had more money to spend might not be an unimportant cause of the early decay of the teeth of present day school children. Lack of care of teeth led to many minor ailments.

Dr. Barker favoured a proper examination of the children when first admitted to school, and careful treatment by a skilled dentist, and from that moment the importance of cleanliness of the teeth should be constantly impressed on children and indeed they should be instructed in "tooth cleansing drill." This, however much of a fad it might appear, was of quite equal importance to bodily cleanliness and the various forms of physical drill already taught in schools.

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MONKEY CHLOROFORMED.—The monkey at the Alexandra Palace "Zoo," which recently attacked the keeper and a few days later made a more savage assault upon one of the attendants (who is still in hospital) was put under chloroform, and had four of his formidable teeth sawn off from the gums. The operation, which was a rather risky and difficult one, was successfully carried out by Mr. W. Smith, canine specialist.

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# Legal.

## CORONER AND UNQUALIFIED PRACTITIONERS.

HAROLD SHIRTCLIFFE, the twelve-week old child of a labourer, who lives in Franklin Street, Sharrow, died suddenly in bed the other evening. Mr. W. W. Alnwick, surgeon dentist, who had attended deceased since birth, sent a note to the coroner stating that in his opinion the cause of death was convulsions. As Mr. Alnwick was not a certified medical practitioner, the note could not be recognised.

The Deputy Coroner, Mr. J. Kenyon Parker, held an inquest last evening, and the evidence of Dr. Lockwood, who had made a post mortem examination, showed that death was due to convulsions.

On the completion of the evidence, the Coroner asked Mr. Alnwick if he desired to give evidence in his own behalf. Mr. Parker intimated that there was no necessity for him to do so unless he wished. Mr. Alnwick said he did not see the necessity. The medical evidence confirmed what he had said in his note.

Mr. Parker: But you are not a qualified man, and I could not take any notice of your note.

Mr. Alnwick: As I have had thirty years' practice, and have attended over 3,000 midwifery cases, I think I am entitled to some consideration, I gave my opinion as to what the child died from, and it tallies with the doctor's.

Mr. Parker: Just answer me this question. Are you a qualified medical man?—No, Sir.

Haven't you been in trouble before now for giving certificates? —Well—no.

I think your recollection is failing you on that?—No, it is not.

Well, gentlemen, I cannot pay any more attention to his notes than to those of any other people, and I have no authority to do so.

The jury returned a verdict in accordance with the medical evidence.

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## MISTAKEN DIAGNOSIS.

An amusing case, in which a couple of rival dentists figured as complainer and defender, provided an interesting 80 minutes at Hamilton Burgh Court.

John Bloomfield, Dundonald Road, Kilmarnock, inspector of branches in connection with the Hygienic Institute, was accused of committing a breach of the peace in the premises of Edward Liebow, professional dentist, Townhead Street, Hamilton, on 23rd October.

Defender's firm are makers of artificial teeth. Their premises and those of the complainer are almost at opposite corners. It appears that a handbill had been circulated in the neighbourhood containing statements which, defender alleged, reflected upon his firm. Mr. Liebow was suspected of having circulated the bill, and defender went to see him about it and to discuss the matter. Complainer mistook Mr. Bloomfield for a patient, and showed him to the operating chair, but when he knew his visitor's business he promptly denied all knowledge of the bill, and ordered the defender to be gone. The latter was reported by the witness to have pushed open the door and cursed and swore.

Defender alleged that complainer spat in his face, but complainer denied it.

Bailie Hamilton held the charge proved, and imposed a penalty of 10s. 6d., or seven days.

## CLAIM FOR BALANCE OF ACCOUNT.

At the Portsmouth Court a claim for £4 10s., the balance of an account for making and fitting a set of false teeth was brought by Mr. C. Foran, dental surgeon, against Mrs. Pinckney. The case for the plaintiff was that the teeth were fitted at the agreed price of £10 10s., and except for having them "eased" no complaint in respect of the teeth was made. On the other hand, however, it was contended that only the top set were of any use at all. On one occasion when the

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defendant was talking to a lady the lower row fell right out. She had tried to wear them, but had not been able to do so. During the luncheon interval two dentists examined the teeth in position, and both gave evidence that the set was a very good fit. The opinion was expressed that no attempt had been made to use them.—The judge thought that what the defendant stated was substantially accurate, and advised an adjournment in order that the plaintiff might have another opportunity of making them more suitable. Costs were reserved.

# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

No notice taken of Anonymous Communications. Name and address must always be given, although not necessarily for publication.

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British Journal of Dental Science

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# THE STATE AND SCHOOL CHILDREN'S TEETH.*

By Mr. John Cordell Oliver, L.D.S,Eng.,
*Hon. Dent. Surg. Cardiff Infirmary.*

As members of the School Dentists' Society you are to be congratulated on being associated in the beneficient work of dealing with nature's defects in the structural development of the teeth at that period in child-life when disease is first evident, and before, as a rule, serious and permanent injury has been brought about.

Such work not only spares the child the pain and suffering associated with defective teeth, but maintains unimpaired the power of mastication, a matter of great importance during the period of growth and development of the body. The teeth of school children frequently decay within a short time after their eruption, and in many cases the destructive process is so rapid that by the time they have grown up and are of an age to understand and value their teeth, they have already lost them. This frequently arises through want of knowledge, and it is the duty of the State to come to the aid of the ignorant and to assist those who are unable to assist themselves.

*A paper read at the School Dentist's Society.



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I was recently somewhat astonished to find that the greatest spending department of the State is that of Education, the enormous total in millions made me wonder whether so large a sum could have been necessary or wisely spent.

Lavish expenditure is reprehensible when no adequate results ensue, as it detracts and dries up the supply of funds necessary to meet the demands of efficiency. Non-essentials frequently receive the greatest attention, while weightier questions effecting the vital well-being of the children are ignored on account of expense.

It is unfortunate that it so frequently happens that the representatives of the public in Educational matters have no technical knowledge of the great question of Hygiene, and so fail to recognise its importance. Many experts in Education are apt to confine their attention too closely to cramming the mind with knowledge, forgetting the claims of the body and the old adage of "Mens sana in corpore sano."

As dental specialists it is our duty to urge the importance of State interference in this matter of school children's teeth. In these days there is abundant evidence of the deterioration of teeth as compared with those of the early inhabitants of these islands. Out of thirty skulls recently discovered in the Valley of Glamorgan, decay was only found in three, while quite recently in a school of 100 in the same County not a single boy was found to have a healthy set of teeth. In my own examination of a school of 54 girls, only one had perfectly sound teeth.

The effect civilisation has had upon teeth has reacted upon the people of the present day in producing a number of maladies which are fostered and encouraged by diseased teeth.

As stated by Dr. Kerr in his report last year, the operating rooms of every hospital have a large number of patients suffering from anæmia and chronic stomach troubles, besides

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a number of patients who in adult life become victims to pulmonary tuberculosis, many of whom have become infected whilst debilitated from gastric disorders due to want of teeth, and the continued absorption of the products of putrefaction.

The late Sir Morell Mackenzie, who as a specialist in throat disease had the teeth ever before him, wrote, "There is probably no department of Practical Physiology so important in the rearing of children as that which pertains to the development and maintenance of their teeth. A judicious exposition of the principles which govern the development and decay of the teeth, if acted on by the masses would probably do more to improve the national Health than many more ambitious designs."

But the poorer classes in this country are mostly ignorant, steeped in prejudice, and improvident, neither have they money to spare to provide skilled attention for their children's teeth, hence it seems vain to suppose that any system of popular education will ever be voluntarily acted on by the masses. To-day while the benefits of dental attention are largely known and acknowledged by the middle and wealthier classes, probably not one in a thousand of the working-classes ever spends a shilling on the preservation of his own or his children's teeth.

In my opinion, therefore, any system of dealing with the teeth of the nation must be compulsory and not optional, otherwise it will be in danger of being frustrated by the prejudice of the parents and the unwillingness of the children.

Being a matter vitally effecting the well-being and health of the community, it should be carried into effect without delay. Considering the facility with which School Dental attendance can be given and the limited expense which it would entail on the nation, there is no reason why an earnest progressive government should not institute this great reform, and thereby earn the gratitude of all future generations.

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# THE EDUCATION (ADMINISTRATIVE PROVISIONS) ACT AND DENTISTRY.*

By W. T. Elliott, D.D.S., L.D.S.I., & Edin.

In a speech in the House of Commons on March 27th, 1905, Dr. Macnamara, in referring to this matter, said that in thirty years' experience of schools he could say that 20 per cent. of the children had not in any way benefited in the general improvement of conditions, and were "in an entirely hopeless condition, a condition never more hopeless"; and he went on to say that this applied to about one million children in the British Isles. Further than this, Dr. Eicholz, connected with the London County Council Schools, has estimated that the number of actually underfed children in these schools is approximately 122,000, or about 16 per cent. of the Elementary School population. This refers only to underfed or half-starved children, not to those improperly fed.

Again, in the recent Report of the Inter-departmental Committee on Physical Deterioration a very startling consensus of opinion was elicited as to the effects of improper or inefficient feeding in determining physique, and this factor was acknowledged by every one of the experts to be among the most prominent of the causes to which degenerative tendencies might be assigned; and beyond all this, the recent International Congress of School Hygiene in its proceedings proves that all these statements are absolutely accurate.

In view of all this it is quite clear that we are disastrously below the normal standard of health-efficiency in child-life, despite the fact that some authorities have stated that we have not deteriorated during the past 50 or 100 years.

* Read before the School Dentists' Society.

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This is one of those social problems which may be dealt with in two ways—either by philanthropy, or by the State acting through Local Authorities. Voluntary effort cannot adequately deal with the problem,—its solution must be undertaken by the State. The child's health—mental and physical—is a National asset which it is the duty of the State to preserve and foster.

Clearly then, adequate nourishment for children in the Elementary Schools, an immunity from exhausting employment, and a re-organisation of the environment and educational influences are objects of expenditure which will be amply repaid in the improved physique and intelligence of the young.

So that it is evident to common-sense that the State should now expect that no children for any reason whatever should be allowed to fall below a certain standard of physical efficiency on account of neglect with regard to food, clothing, or attention to health, because it is fully admitted that the physical part is as essential as the mental part in the development of the child.

The members of the International Congress of School Hygiene, meeting in London in August last, were unanimously in favour of medical inspection as being vital to the interests, not merely of the children, but of the State; because it is clear that not merely the poor but those of well-to-do people who attend Public Schools suffer just as much, *e.g.*, from defective teeth, etc., and the attendant consequences, so that poverty and ignorance are not the only factors to be taken into consideration.

The President of that Congress, in his Inaugural Address, insisted on the desirability, the necessity even, of Medical Inspection—which he said was "the keystone of physical education. Without it the defects of eyes, ears, nose and teeth which affect individual scholars cannot be ascertained, and so those

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children remain backward in their learning, suffering in their bodies, and so much damaged in physique that they are unfitted for many occupations, cannot enter the Army, and go to swell the numbers of the criminal classes. Moreover, such defects are most expensive to the country."

All this has culminated in the recent passing of the Education (Administrative Provisions) Act, and Section 13, Clause B., as follows, is that part of it which affects what we have to consider :—

"The duty to provide for the medical inspection of children immediately before, or at the time of, or as soon as possible after their admission to a Public Elementary School, and on such other occasions as the Board of Education direct, and the power to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools.

"Provided that in any exercise of powers under this section the local education authority may encourage and assist the establishment or continuance of voluntary agencies, and associate with itself representatives of voluntary associations for the purpose."

This Act seems to be a turning point towards a more efficient consideration of the needs of the children, for it was not for many years regarded that a healthy body is of the supremest importance, and that the training of the mind and the intellect must follow afterwards. This is even yet not regarded as the correct course by all, but it is certainly being realised that it is worth while for economic reasons to spend money on an attempt to make Schools centres and preserves of health, and one of the first steps to be taken is an organisation of a system of Medical Inspection. Section 13 referred to, places this obligation on the local Education Authority. It states the powers and duties of the Authorities should include "the duty to provide for the Medical Inspection of children immediately before, or at the time of, or as soon as possible after their admission to a public Elementary School, and on other occasions as the Board of Education

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direct, and the power to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children attending public Elementary Schools."

To carry out these provisions the Board of Education has without any delay formed a Medical Department to advise and assist in discharging these new duties. The principal duties of the Board at present will consist, I believe, in advising and supervising local Education Authorities as to the manner and extent of this Medical Inspection. It will give directions as to the frequency and method of such inspection in particular areas ; and further than this, it will collect and collate records and reports made by the Authorities, and will issue an official Annual Report on the whole matter.

Hitherto Education Authorities might have children medically inspected, but they had no power to provide medical treatment vested in them, but this new Act gives this authority, although it is still optional to Education Authorities either to adopt or ignore these provisions.

Under present conditions roughly about 50 per cent. of the children attending our Primary Schools are physically incapable of assimilating the education provided.

The following results are taken from statistics which have been published :—

Of 70,000 children in Leeds, 75 per cent. have bad teeth.

96 per cent. of the children attending Council Schools in Kettering have defective mouths. (Mr. A. Layton in a paper read at Cardiff, May, 1907).

Of 10,517 boys and girls of the average age of 12 years in English and Scotch schools only 14.2 per cent. have complete sets of teeth free from decay ; 85.8 per cent. having defective teeth. (Mr. W. Cass Grayston in a paper read at Cardiff, May, 1907).

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Boys and girls attending Elementary Schools of Brighton :—

7,326 examined.

23.2 per cent. having sound teeth.

76.8 „ „ „ carious „

(from the Report of the Medical Officer of Health for Brighton).

Germany.

Dr. Jessen (of Strasburg), says that out of 4,000 children 2.5 per cent. have sound teeth.

97.5 per cent. have defective dentition.

*Russia.*

Mons. Gabronsky, at the International Congress on School Hygiene, revealed the fact that 95 per cent. of all school children possessed carious teeth.

*America.*

Children with teeth affected, 93 per cent.

*Italy.*

92 per cent. with affected teeth.

*Switzerland.*

90 to 100 per cent.

In Norway, Sweden, Denmark, Hungary, and other States the figures are very similar.

In New Zealand 85 per cent. require treatment, and there, I believe, they have under consideration some scheme similar to the one we are now organising.

Sweden has provided inspection long ago ; there is a Medical Officer appointed and remunerated by the State on the staff of every secondary school.

In Paris each school physician has from 1,200 to 1,800 children under his charge.

In Strasburg, where attendance is compulsory and treatment free, medical inspection was instituted in 1902 with such satisfactory results that other German cities have followed the example.

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In Japan every child attending school undergoes a medical examination, special attention being paid to the teeth.

In Wiesbaden there are some 10,000 elementary school children who are under the supervision of seven specially appointed school doctors, each receiving an average stipend of about £40 per annum. The school doctor has to examine every child when it enters and leaves the school, and during its third, fifth and eighth school years. He rejects those who are unfit for school attendance, he notifies defects to the parents, and he may give them advice as to treatment. He visits the school for about an hour every fortnight in order to deal with current cases of ill-health.

The special commissioner appointed by the New York Health Board to medically examine children attending public schools found that 27 per cent. suffered from toothache.

Thus from some causes yet unknown—whether it be increased nervous strain, enforced vaccination, or contraction of the jaw under civilized conditions—there is a marked increase of tooth disease in all countries.

There are two reasons which may be cited for carrying out the provisions of this Act.

First, the immediate purpose being to determine the fitness or otherwise of the child for education at school, so that no physical or mental injury shall result from school work.

Secondly, the ultimate purpose is to protect the child against disease and disease-producing conditions, and to make it a useful asset to the State; and to carry out these two principles machinery has to be constructed and in due course set in motion.

It seems to me, so far as our particular part of the work is concerned, that it is the duty of this Society to formulate a scheme to carry out the requirements of the Act, for the Board of Education can hardly deal efficiently with the Provisions of the Act without consulting experts in Dentistry.

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It involves a scale of remuneration or fees, and it is therefore necessary to bear in mind that inspection under this Act includes treatment, and that there are about six million children in the Elementary Schools of Great Britain who will have to be in some measure dealt with. Hardly any practical measures for grappling with this huge mass of treatment have yet been suggested. It is subject of immense importance to us as a profession, to us as a Society, and to us all individually.

Taking Birmingham as a typical centre, and where there are better possibilities of dealing with this matter than in many other places.

| | | |
|---|---|---|
| Number of Elementary Schools | ... | Council 152 |
| | | Voluntary 117 |
| Number of Adult Teachers | ... | 2,048 |
| Population of Area ... | ... | 553,155 |

(About one-sixth of the population being at school.)

## TOTALS OF COUNCIL AND VOLUNTARY SCHOOLS.

FOR THE TWELVE MONTHS, ENDED 31ST JULY. 1906.

| Age ... ... | 3-4 | 4-5 | 5-6 | 6-7 | 7-8 | 8-9 | 9-10 | 10-11 | 11.12 | 12-13 | 13-14 | 14-15 | *Over 15* | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Totals of Boys and Girls at each ag. | 1305 | 4741 | 9049 | 10182 | 10693 | 10136 | 10040 | 9856 | 9793 | 9258 | 8057 | 598 | 42 | 93750 |
| Percentage at each age ... | 1·3 | 5·0 | 9·6 | 10·8 | 11·4 | 10·8 | 10·7 | 10·5 | 10·4 | 9·8 | 8·5 | ·63 | .04 | |

Total Number in Infants' Department ... 34294.

Percentage „ „ ... 36·5.

Total Number in Boys and Girls' Department 59456.

Percentage „ „ ... 63·4.

According to the report of the Dental Hospital authorities, only 4 per cent. of the children have normal dentition, 96 per cent. requiring attention.

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This question may be considered under four heads :—

1. That of the parent and child.
2. That of the tax-payer.
3. That of the dentist.
4. That of the teacher, and those having control of the education of the child.

1. With regard to the first, it is quite probable that no serious objection will be raised by the parents, most of whom will be glad to have such matters attended to. An appeal to a mother's pride in the personal appearance of her child is an effective means of gaining her attention, and the sense of parental responsibility will be deepened if it is pointed out that no matter how well she feeds or dresses her child, a row of unsightly teeth will spoil the whole effect. Parental persuasion and self-interest should be relied upon rather than compulsion, though in some cases the latter may be necessary. In Poor Law Schools dental treatment is compulsory where there is an appointment, but in Elementary Schools it should be at first optional, compulsion being used only as a last resort.

2. The second point seems to be the most important of all, and presents difficulties less capable of satisfactory solution. The problem in my mind is how the Act can be carried out without lessening the responsibilities of the parent, and with a reasonable remuneration to those who are appointed to do the work. The entire cost should not fall upon the tax-payer.

3. From the third point of view, it must be remembered so far as remuneration is concerned, that the work is arduous and exacting. For the present, however, it is merely inspection that is required, although treatment must eventually become a reality: but what the exact nature and extent of this examination is, or even of its organization, is not yet known. At present I believe it is not compulsory on all

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authorities at once, so that those centres where the best organization exists can be put in working order first, in order that such an experience will materially assist the authorities in carrying out the work in less populous districts.

4. From the fourth point of view it is evident that both inspection and treatment must interfere as little as possible with school work, and must be carried out with the maximum of efficiency combined with the minimum of cost. I would, therefore, urge that the work of the Dental Inspector in examining the teeth should be done in a properly arranged room at the school, thus avoiding the waste of time involved in sending the children to some distant centre.

Full co-operation with the teachers is essential, and all this means an enormous amount of extra work to them, for among other things systematic cleaning of teeth should be enforced at school to ensure its being properly carried out.

These points of view, therefore, all require very careful consideration because of the necessarily diverse interests which are concerned.

With regard to the third of these points, it seems to me of the utmost importance that the duty of inspection and examination for treatment should be, and I think to be efficient, *must* be done by a chief Inspector, who should be under the chief Medical Officer appointed to the district, and he must necessarily be qualified, both by experience in dental practice, and by possessing qualifications in dentistry, because the subject is one demanding more dental experience than medical ; and further, he should devote his whole time to the duties of the office, and should be paid a salary according to the size of the district, or the number of children over whom he has control. In the case of a centre like Birmingham it seems to me that the requirements would be met by a salary of something like £500 a year. The duties would be, first, to examine the teeth and mouth, and tabulate statistics ;

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secondly, to instruct both the teachers and the children in Dental Hygiene; thirdly, to give instructions as to the treatment of the teeth and to supervise the proper carrying out of such treatment; and lastly, to be responsible for the administering of anæsthetics.

I now come to the point as to how the treatment of the teeth is to be carried out, whether through the agency of existing Dental institutions, or by State Aid methods.

My suggestions are these:—That charts should be filled up by the chief Inspector, and the parents of the child should be made fully acquainted with the desirability and urgent necessity of such work.

With regard to the treatment being carried out, it seems to me that it might be done in three ways:—

First, by a properly equipped surgery at each school, or at convenient centres where duly appointed dentists would attend. This would be effective, but very costly.

Secondly, at Hospitals, but here all cases could not be treated by hon. officers unless the Institutions were reorganised; nor do I think it desirable, to have Hospital Departments properly equipped where men give their whole time to the work, because this course would not solve the difficulties of area and distance in a large number of cases. The Public Health Act of 1875 gives power to Authorities to establish Hospitals, and its provisions could be put in force, I suppose, for the purpose of this Act.

Thirdly, at the offices of private practitioners.

With regard to the second point, I think that this method would be extremely undesirable as matters stand, inasmuch as it would tend ultimately largely to do away with and abolish private practice.

The third method,—treatment by local appointed dentists,—seems the most desirable from several points of view, and if young practitioners were appointed who were prepared to give

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sufficient time to the work, at a fixed scale of fees for a certain schedule of requirements drawn up by the Education Authorities, and fixed as in the case of Poor Law Administration, it would be the most desirable course. There are many who would be glad to undertake work of this description at certain hours of the day on such terms, and an opportunity might thus be created for young practitioners to contend against the inroads of modern methods of irregular practice. These young dentists would have a chance of ultimately increasing their practice, for when these children leave school they will naturally desire to continue with those by whom they have been formerly treated and would be retained as patients. Personal relationship between patient and dentist, which is after all a consideration not to be ignored in the practical carrying out of our work, would be more fostered. This desirable result cannot be secured under any system of State officialism.

I may here say one word with regard to gratuitous work and treatment. From any such suggestion I entirely dissent. There has been far too much gratuitous work done, and the more that is done the more, undoubtedly, will be expected.

Mr. Wood, of Kettering, suggests that Dentists should be appointed by the State and paid by the State, but Dr. Fenchel (Hamburg), in his paper on "Dental Aid to the Poor," read at Cardiff, says "only work paid for will be esteemed," that was his experience, and with this view I accord.

Mr. Capon, in his paper read at Leeds in November (see J.B.D.A., Dec. 2, 1907), suggests a scheme for inspection and free treatment to be carried out at a central institution The *preliminary* outlay, he suggests, at a centre like Leeds with about 82,000 children for whom to provide treatment, would be for salaries of staff, fitments and building, etc., about £1,300 per annum. This scheme appears to me to be in

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many ways undesirable, not only on account of the expense which such an institution would necessarily entail, but because all the children having to go to one centre would seriously interfere with the school work.

I suggest that a chart of the work necessary to be done, signed by the parent giving consent to the treatment, should be sent to the operator by the Dental Inspector. When the treatment is completed this should be signed by the operator and countersigned by the Inspector. I think Wallis's chart is all that can be desired for the purpose of statistics, and nothing less than this would be satisfactory; but a more simple form of chart, such as Shorrock's, would be better for recording the required treatment.

As to the time of treatment, this might be at entrance into the school as the Act suggests, and again at fixed periods, say, at 6 years of age, 10 years of age and 12 years of age, or on leaving school. These times have been suggested by some who have written upon this matter.

So far as the extremely difficult question of charges, fees, and emoluments is concerned, some suggestions have been made by previous writers upon the subject; for instance, Mr. A. Layton, in his paper published in the *British Dental Journal* of July 15th last, suggests the following fees :—

| | | | | | |
|---|---|---|---|---|---|
| Extractions... | ... | ... | ... | 1s. | 0d. |
| Do. | with gas | ... | ... | 5s. | 0d. |
| Stoppings | ... | ... | ... | 2s. | 6d. |

Regulation cases by arrangement.

I would suggest a sliding scale of fees somewhat on the following lines—so that the more work there is to be done the less in proportion it will cost,—such a course must obviously be adopted if the work is to be done by dental practitioners.

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Suggested Fees :—

| | | | |
|---|---|---|---|
| A. | For 1 filling... ... | ... | 2s. 6d. |
| | „ 5 fillings ... | ... | 10s. 6d. |
| | „ 10 „ ... | ... | 15s. 0d. |

This sliding scale would include any filling that it might be deemed best to use.

| | | | |
|---|---|---|---|
| B. | Necessary extractions for regulating | | 5s. 0d. |
| | Regulating plates ... | each | 10s. 0d. |
| | Attendance and necessary alteration when required ... | ... | 15s. 0d. |
| C. | Extractions ... ... | each | 1s. 0d. |
| | „ by injection | „ | 2s. 6d. |
| | „ c. nitrous oxide, each case | | 5s. 0d. |

(No limit to number of teeth removed).

| | | |
|---|---|---|
| D. | Minor operations for obtaining hygienic conditions, such as scaling, removing of pulpless deciduous teeth, obtunding dentine, stomatitis, and other work not included in the above | 2s. 6d. |

The above scale must be regarded as a suggested one for discussion.

It will be argued that this scheme will not provide for the poor who can make no payment,—but I am led to believe that these will be but a small proportion, since only about 2 or 3 per cent. of the children in Birmingham require assistance with food and clothing from the funds provided for that purpose, and some similar fund could be instituted for this special purpose. I would not suggest a voluntary fund, such as has been already instituted in this city, for food and clothing, but rather as an alternative, that a weekly fee per head from the parents, such as was paid before education was free, would meet the difficulty and might go towards a common fund for dental and medical treatment. Or, again, it might be made a charge on the rates;

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in Birmingham an additional rate of ¼d. in the pound would bring in over £1,500 a year, which would probably more than cover the cost of free treatment where necessary. If, however, such a course were adopted it would be more equable if the funds were provided by the Imperial Exchequer inasmuch as the charges would fall most heavily on those centres where the rateable value is lowest, people are poor and children more numerous.

As an efficient and also economical method, a system of treatment on the lines I have suggested would involve the ratepayers in the least possible cost—£500 or thereabouts per annum for about 100,000 children, exclusive of any free treatment which may have to be provided. It could be set in motion with nearly the same methods of administration as exist at present, and would allow for necessary development, and render new agencies unnecessary.

But whatever is done, I would emphasize that it be paid for, if ever so little, for only work that is paid for is appreciated.

I cannot advocate the work being done at so much per head, but rather at a fixed charge under a schedule based on the lines I have indicated. Under this scheme there is a means provided by which the treatment of the whole of the children may be carried out without some having to attend hospitals or similar institutions where no direct payment has to be made.

In conclusion, dental treatment during school life, for which we have been so energetically contending in the face of so large an amount of scepticism and suspicion, must bring more recruits to the Army and to the Navy; and by spreading knowledge among the teachers and children as to the value of preserving the teeth and the way to do it, it is evident we must materially increase the value of the children as an asset to the State, by enabling them to become citizens



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capable of fulfilling their work in life. If these methods are properly carried out we may be sure of an increase in national efficiency, a greater intelligence and a larger mental activity, so that the work of education may be more successfully accomplished; and thus, as Shelley says :—

"Every heart contains perfection's germ."

So under these conditions in every child there would be a posssibility of extended usefulness.

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CHILDREN'S TEETH.—The report presented at the annual meeting of the governors of the Birmingham Dental Hospital contains, in addition to the statement of the number of patients and number of operations, some interesting information concerning the results of the examination of the teeth of the children attending some of the elementary schools which has been carried out during the past year by the aid of money provided by an anonymous donor. During the year 2,733 children were examined and the teeth of 96 per cent. required treatment. If the proportion is the same throughout the city we are brought face to face with the fact that only 4 per cent. of the children attending the elementary schools have normal healthy teeth. If this is so and if the state of affairs is to be remedied it means a very large annual expenditure, and if things are to remain as they are then faulty digestion will continue to be responsible for unhealthy children and adults in spite of the improvement of other conditions.

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The tenth annual dinner of the Glasgow Dental Students' Society, held in the Windsor Hotel, was attended by a large number of dental surgeons, students, and friends. The function was presided over by Professor Watson. The evening was a most enjoyable one, and a short programme drawn up by the students was well appreciated by all present.

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British Journal of Dental Science

LONDON, JANUARY 15, 1908.

## OUR TITLE.

It is sometimes asked "Of what use is the Dentists' Act, as it only protects Title? Anyone can perform any dental operation so long as he does not call himself a dentist, or hold himself out as specially qualified. In what way are we better off than before the Act was passed?"

In reply to such queries we would say that we, as a liberal profession, are very much better off by reason of the Act of 1878, and perhaps we are much better off than we should be were any further legislation now passed, such as the abortive Bill introduced by Lord Hylton into the House of Lords last year. The Dentists' Act has consolidated the profession, has promoted progress and *esprit de corps* and has diminished professional jealousy. It has provided the public with a roll of men registered as being competent to provide them with skilled treatment. It has placed them under the General Medical Council, which, although not an unmixed blessing, has given us a *status* and has placed us in touch with our medical brethren as nothing else, in all probability could have done. These medical men as a rule advise their patients to consult registered dentists and they are prohibited by the the General Medical Council from administering anæsthetics to those who are not on the Register. These are privileges not to be despised and it must moreover be remembered that the Act has not yet been tested to its full capacity. We are beginning to find out that its scope is more far-reaching than was once supposed; recent prosecutions have been almost uniformly successful, and the phrase in the Act

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"holding himself out as specially qualified" is one which contains many possibilities.

The public press as a rule is ignorant of the wording of the Act and frequently falls into the error of calling the un-unregistered men dentists. As the latter persons insert advertisements in the press which the ethical practitioner is forbidden to do, it is not surprising that the advertising man is more highly thought of by those benefiting by the advertisements, than the non-advertising dentists. Members of the Stock Exchange, who also are not allowed to advertise for business, have a standing advertisement in all the leading papers acquainting the public with this fact. It is a matter of surprise that non-advertising dentists have never imitated their example. True, it would be a more complex matter to handle than the Stock Exchange notice, as many registered practitioners do advertise, and if those advertisements are not too blatant the Medical Council ignores them. Still it seems to us that it would be quite possible for non-advertising dentists to intimate to the public that the self-advertisement indulged in by so many of the unregistered fraternity is unprofessional and to be condemned.

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Dentists in the United States Navy.—The question of the appointment of dentists to the U.S. navy has been under discussion for upwards of 50 years but no legislation has been secured. Dentists are now appointed at naval stations as private practitioners or resident dentists without any rank in the navy. A Bill was before the last Congress empowering the President to appoint dental surgeons to serve the officers and enlisted men of the navy and marine corps. The Bill required that dental surgeons shall have the rank and compensation of acting assistant surgeons in the navy, shall be graduates of standard dental colleges, trained in the several branches of dentistry, and shall pass a physical and professional examination. The Bill failed of passage and now the agitation has begun to secure its passage at the next Congress.

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YOUR TOOTH OR YOUR LIFE.—The story comes from New York that Thomas Carney, a resident of Fifth Avenue, was on his way home when, remembering a joke he had heard at the club he began to laugh. In the laugh his mouth opened, and David Scanlon, a man with a past, saw the shine of the gold plate attached to Carney's false teeth. The next moment Scanlon had seized Carney by the neck. "Open up pal, say something or I'll choke you," he said. Carney yelled lustily, whereupon Scanlon with a quick gesture snatched the teeth out of Mr. Carney's mouth and ran away. Fortunately a detective was near, and Scanlon and the false teeth were quickly captured.

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THE SOLDIER'S TOOTH-BRUSH.—Lieutenant Le Mesurier writes to the *Army and Navy Gazette* as follows:—"At a time when more men are being rejected for the Service through bad teeth than for any other cause, it may not be out of place to mention certain facts relative to the latest addition to the soldier's kit—viz., the tooth-brush. The tooth-brush has only been added to the kit during the last few years, the authorities being forced to take measures to remedy the evil of decayed and dirty teeth, which was becoming a positive danger to our Army; but it is one thing to serve out the tooth-brush and another to be sure the men use them. In my two year's experience of depôt life, in which time hundreds of recruits have passed under my notice, I have found that the majority of men neglect their teeth entirely. The tooth-brush is shown at kit inspections, but only as "a thing of beauty and a joy for ever" since there seems no prospect of them ever being used and worn out. At my depôt lectures are given once a week by the senior and junior officers in turn on campaigns in which the regiment has taken part. I have always found time to add a few minutes' "straight talk" to the recruits on cleanliness and manliness, which I am happy to say has had some results. I have also found it absolutely necessary to make it a crime for a man to come on parade not having washed his

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teeth, and I go so far as to examine my men's teeth now, just as I do their clothing and equipment. This, in my opinion, "at present," is the only way to make certain that the teeth are not neglected. I have seen many a smart soldier, clean in every respect except this one, turn out on parade with black teeth and going away feeling hurt and wronged by his officer because he has been told to clean them. It is only by a little "straight talk" and "daily inspections" that this fearful evil will be stamped out in the Service."

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SUFFOCATED BY FALSE TEETH.—Evidence was given at an inquest at Paddington on John Thos. Findon Willis, 64, a widower, of independent means, who was discovered dead in his apartments at Sutherland Avenue, London. The room in which he was found was full of gas, and medical evidence showed that he had been dead for nearly 40 hours. The doctor who was called stated that Willis had been suffocated by his false teeth. He must have drawn them into his throat, and, finding himself suffocating clutched at a gas chandelier, and so caused an escape of gas.—A verdict of "Accidental Death" was returned.

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DENTAL SURGEON'S DEATH.—An inquest was held at Bootle on Charles Townshend Hill, forty-eight, a dental surgeon, of County Road, Walton, Liverpool. The deceased and three others were proceeding in a motor car to a friend's house for supper, and while the car was travelling fifteen miles an hour he got over the side, and was terribly injured, dying in hospital soon after. The jury returned a verdict of accidental death, and attached no blame to anyone.

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On New Year's Day Peter Ryan, aged 20, a millhand, was caught in the surgery at 45, Horton Lane, by Mr. W. G. Jones, a dentist. He at once ran out, but Mr. Jones caught him. Ryan was sent to gaol for three months.

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# Abstracts of British & Foreign Journals.

## THE SELECTION OF TEETH.

By J. P. Root.

The easiest and quickest way to make or unmake a reputation as a good or poor dentist is in prosthetic dentistry, the free advertising received, resulting from the insertion of a well-fitting, artistic denture, is only equalled by the same (only different) advertising, resulting when the the denture is ill-fitting and inartistic, the latter form of advertising will be more freely given, however.

The dentist who depends upon mail orders for the selection of his teeth is largely to blame for many wrongs, placed upon the shoulders of the dealer.

The reasons are simple and easily remedied by following the few simple rules here enumerated.

If you desire a certain make of tooth, order by the shade guide of that manufacturer; do not order a Justi tooth by a S. S. White guide and expect perfect results. If ordering from a catalogue, give number of shade, and mould, giving page and date of catalogue used, as manufacturers change catalogues at times.

The most certain way of receiving what you desire, is to send a plaster of paris model, accompanied either by the tooth from your shade guide, or one having the exact colour desired, stating whether you desire a long or short bite ; a model not mounted on articulator, gives no indication regarding bite. In ordering a Logan or other crown send plaster model, with the desired tooth cut off at gum line, having a clear cut representation of the root, also cut the hole for pin where it belongs. If this is accompanied by a tooth giving the exact shade desired, the young lady at the tooth counter can immediately fill your order and do so to your own and her satisfaction.

The character of a model sent in usually indicates the character of the dentist sending it, and it is no more than natural if you send a neatly trimmed model, accompanied by proper instructions, that the salesman should surmise that you are a particular man, and the probable result is, more attention is paid to your order than to one which is accompanied by an unsightly, untrimmed model with the instructions to send a medium shade crown for same.

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Remember, your dealer is more than anxious to please you by sending what you desire (a return of your order for correction costs him extra time and money), and while your opinion at times may be that he is careless or indifferent, the probabilities are that lack of proper models and instructions are to blame for any mistakes made.—*Western Dental Journal.*

## THE SALIVA.

THE study of the saliva is receiving more attention than it has perhaps been given at any time in the past, and if the investigations along the lines already begun continue, we may expect many mysteries cleared up that will no doubt enable us to treat systematically some of the effects of faulty metabolism that have heretofore been treated surgically, and then, too, with only a moderate degree of success.

The *Lancet* says: "Dr. C. Risa has been able to confirm the views of other investigators to the effect that there is a distinct relationship between dental caries and alkalinity of the saliva, and that a high alkaline reaction constitutes the best means of combating the development and progress of caries. From experiments on the means of modifying the saliva, he finds that a diet consisting of food stuffs rich in calcium salts increases the alkalinity and quantity of the saliva, and he believes that such a diet influences in a marked way the quality of the teeth.

In my paper last year I said that I did not believe that dentists, as a rule, pay as much attention to the condition of the saliva of our patients as we should, and I am still of the opinion that until we do learn to analyze the saliva, and learn what to administer to produce certain changes in this fluid, we shall continue to see the ravages of decay in the mouths of our patients, and the beautiful fillings we insert return to us with recurrences of this trouble.

### ATROPINE SULPHATE.

When your patients have an excessive flow of saliva administer a 1-150 gr. tablet of atropine sulphate three-quarters of an hour before operating. The patient's mouth will not become excessively dry, but the flow will be considerably checked, and the effect of the drug will continue four or five hours.—*Items of Interest.*

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## PRECAUTIONS IN SOLDERING.

DISCOURAGING failures have resulted from the unskilful use of the blowpipe, and the utter disregard of certain requirements that must be observed if we wish to eliminate the danger of accidents, such as burning the case, checking the porcelain facings, and balling up of solder. It is necessary that all parts to be soldered should be absolutely clean before such procedure is attempted; any wax on the tooth should be removed by placing the piece in chloroform; the metal parts should be treated in an acid bath to remove all oxids and base metals, and thorough apposition of the cusps and backing should be observed. When backing the tooth allow the material to project beyond the approximal sides, so that when the teeth are assembled in the bridge, and ready for soldering, the backings will lap upon each other, thus avoiding those troublesome joints between the facing, as well as the objectionable V-shaped spaces.

In investing the case, use as little material as is practicable to hold the parts firmly in position. I do not know of a more admirable substance for this work than that used by Dr. Fred. A. Peeso, of Philadelphia. It is ordinary red bird-gravel, or sand, two parts to one of plaster, which gives a dense and strong investment, capable of being carved or trimmed to a very compact form, and showing no perceptible shrinkage when heated. When ready for soldering, place the case over a burner on a disk of copper plate, so as to diffuse the heat, making sure that the porcelain facings are heated first, for as you are all well aware, the porcelain, being a mineral substance, absorbs the heat more slowly than the platinum pins, and consequently the expansion of this substance should precede that of the pins; otherwise a fractured facing is liable to result. Therefore be careful to apply the heat gradually and uniformly, dusting the surface to be soldered very lightly with powdered borax and increasing the temperature of the piece with the blowpipe until it reaches a red glow.

Now you are ready for the actual soldering. The solder having previously been cut into a long strip, dip it in liquid flux and apply it to the particular part of the bridge you wish to unite, at the same time cutting down the flame so that it will play directly on the extremity of the solder; unite the cusp to the abutments first, and then the cusps to each other,

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for by so doing the tendency to shrinkage will be overcome by avoiding an excess of solder in any one area. When this has been done, keep feeding the solder in at the lingual edge of the cusps until the desired contour has been acquired. By manipulating the solder in this manner, you can direct it to the exact spot you wish it to flow; there is no "balling up" and no air bubbles are confined—to cause a porous piece when completed—and if the slightest care be exercised it is next to impossible to burn the bridge.—FRANK E. LOGAN, *Dental Register.*

## CLIFFORD *v.* TIMMS IN THE HOUSE OF LORDS.

COMMENT was made at some length in *The Lancet*, on February 9th of last year, and again on June 22nd upon the judgment delivered by Mr. Justice Warrington in this case and in others involving similar questions of law and fact and upon the not unexpected reversal of his decisions by the Court of Appeal. It will be remembered that Mr. Justice Warrington had before him a clause incorporated in certain deeds of partnership entered into by dentists which provided for the termination of the partnership by notice if either partner should be guilty of "professional misconduct or of any act calculated to bring discredit upon or injure the other partner or the partnership business." This clause his lordship was asked to apply and to say that notice had been rightly given under it upon evidence that the brothers named Clifford, members of the partnerships in question, had been found by the General Medical Council to have been guilty of conduct infamous and disgraceful in a professional respect and had had their names struck off the Dentists' Register.* Mr. Justice Warrington heard considerable legal argument as to the admissibility of the report of Dental Committee of the General Medical Council as evidence upon the issues raised and eventually the report was admitted. His lordship, however, found himself able to draw a fine distinction between "professional misconduct and conduct infamous and disgraceful in a professional respect," a distinction upon which we commented at the time to the effect that his view was not likely to remain long

*See *The Lancet*, June 2nd, 1906, p. 1557.

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uncontested, and, as a matter of fact, the Court of Appeal was unable to take his view.

The Court of Appeal, in delivering judgment, discussed the distinctions thus drawn and the question of evidence at some length before disposing of them, and the House of Lords has now considered that no further comment upon them was needed. The Lord Chancellor and those with him preferred to emphasise their dissent from the conclusions arrived at by Mr. Justice Warrington after considerable facts which however they were proved, could hardly be regarded as being in dispute before him. The Lord Chancellor in giving judgment said that "he did not think it was the least necessary to enter into the legal question interesting as it might be, which was so much discussed in the Court of Appeal. It seemed to him to be a matter of indifference whether the order made by the General Medical Council should be admitted in evidence or should be excluded. The question depended on the advertisements. The form of the advertisements which had been sanctioned by Mr. Clifford certainly in the circumstances amounted to professional misconduct." As to the question of the advertisements which formed part of the subject of complaint against Messrs. Clifford, Mr. Justice Warrington had made observations to which we called attention at the time, for he said that "advertising was admittedly allowed in the profession and he failed to see any professional misconduct" in the publication of the pamphlets before him. The Cliffords in advertising extensively an "American Dental Institute, Limited," which they had joined in forming, had drawn unjustifiable comparisons between English and American dentistry, and in an article inserted at the cost of £100 in the *Review of Reviews* had among other things, dwelt upon the dangers of "close physical intimacy for an hour at a time" between the dentist and his patient. As to this the document in question went on to say "Although in 100 cases no mischief ensues in the hundred and first it may be otherwise. It has been otherwise as everyone knows who has any acquaintance with the profession," and it proceeded to describe how the alleged evil arising from physical intimacy was obviated in the case of the American Dental Institute, Limited, by the presence of a "trained maid."

In the House of Lords, to which appeal was made by Messrs. Clifford from the judgment delivered by the "Court

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of Appeal it is satisfactory to note that the counsel, appearing for the respondents, the partners who gave notice to terminate their partnerships, were not called upon to argue on behalf of their clients. The highest legal authority may therefore be said to have disposed without any hesitation of the shades of meaning introduced by Mr. Justice Warrington into tolerably plain English phrases and obviously foreign to the intentions of those who framed them; and also in no less unequivocal manner to have set the stamp of its approval upon the enforcement of a high code of ethics in the medical profession, publicly by its governing body, and privately between its individual members.—*Lancet.*

## MEDICAL INSPECTION OF SCHOOLS.

"M.D." writes as follows to the *Western Mercury*:—"It will be a big thing this inspection of schools—perhaps the biggest product of 1907—and certainly as time goes on its true bigness will be clear to wider and wider circles.

It means more than badly-needed help to the medical officer of health in his struggle with infectious diseases, or the prevention of myopia among the children, or the sharpening of the wits of those who have gravitated, in obedience to a law well known to every medical man, to the bottom of their classes by reason of their adenoids.

These things and dental decay and early spinal trouble and many more are all of the greatest moment to the State and Heaven forbid that I should seem to minimise them.

But it is not of them that I wish to speak to you to-day but, rather, looking into the future, of the connection with the prevention of moral disease, of crime.

Are we satisfied with the present ways of dealing with crime? The poor woman Cakebread was punished some hundreds of times for drunkeness; exactly that number of times the remedy proved useless. It is about time we devised another.

Now in attacking a disease—be it moral or physical—the first step is to investigate its whole course, to recognize it in its beginning, to trace its causation, and the factors that favour or retard its development. And then we shall mostly find that treatment applied early is better than treatment applied late, and that prevention is better than either.

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And so it will behove the medical inspector to record the stigmata of degeneration, when such exist, and to conduct such psychometric tests as shall, with the happy co-operation of the teachers, lead to the training of each child according to its individual needs.

The first step towards the organisation of a National Medical Service, working for the State and the good of all, was taken under the Public Health Act of 1875. After nearly a third of a century we take a second step, which, if only the Board of Education, the teachers, and the doctors will see it in its true light, will do even more for moral than the other has done for physical disease."

## DENTAL MATTERS.

(*Taken from the Report of the London and Counties Medical Protection Society*).

A DENTAL member complained that an unregistered practitioner had a large board outside his premises on which he was described as late with ——— of Sheffield, Dental Surgeon. The offender was warned, and his solicitors replied contending that the title "Dental Surgeon" was a description of the dentist in whose employment their client had been. The solicitors were told that in any case the description of their client constituted an offence under the Dentists Act, 1878. Finally, while still disputing the legal points, the unregistered man removed the board.

A dental member, after keeping for a year a vulcanite denture which he had replaced by a better fitting one for a patient, broke it up. Subsequently he was requested to return the denture or pay for it. He asked the Society to deal with the matter for him. The patient was assured that the plate was of no value, and was told that no compensation could be offered. After threatening legal proceedings the patient allowed the matter to drop.

A dental member complained that an unregistered practitioner was described in the local directory as a dentist. The editors of the directory were written to, and they replied promising to correct the false description in the next issue of their directory.

A dental member complained that an unqualified prac-

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titioner was described in the telephone directory as a dentist. The manager of the telephone directory was written to. He repudiated responsibility for the descriptions given, and said that the description was authorised by the practitioner himself. In reply to a question the manager said that a witness could be subpœned to prove the authority for such entries. The practitioner in question was then written to and accused of making an improper return to the directory. Ultimately he instructed the directory to omit the description in subsequent issues.

The Secretary of the British Dental Association kindly forwarded to the Society information that the General Medical Council had decided that it could no longer approve the Dental Companies (Restriction of Practice) Bill, as amended, and that Lord Hylton had accordingly decided to to take no further steps in regard to it.

A dental member received a letter claiming compensation on the ground that a portion of the stopping used for the patient's teeth had got into his eye, with the result that he had to see a doctor, who, it was alleged, removed the bit of stopping from the eye. The claimant was informed that he was quite mistaken in supposing that any of the stopping got into his eye. He made no complaint of it at the time, and it was very probable that any of the cement got into his eye without its causing any remark. He was told that if he gave the name of the doctor referred to further inquiry could be made. In any case all liability was repudiated. No more was heard of the matter.

A dental member received a solicitor's letter claiming damages for alleged negligence and carelessness, whereby a patient had been caused great pain, etc. It was asserted that a "small wheel used for grinding teeth" had been found embedded in the patient's jaw. Failing receipt of twenty-five guineas within three days, proceedings would be taken against the member, and the offer was without prejudice. The solicitors were informed, on the member's behalf, that he entirely repudiated the suggestion that a small wheel was left in the patient's jaw either by him or by his assistant when the patient was attended to some three or four years ago. He could not, therefore, offer any compensation, and the Society's solicitors would accept service for him. This ended the matter.

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# Dental News.

## BIRMINGHAM DENTAL HOSPITAL.

### ANNUAL PRIZE DISTRIBUTION TO STUDENTS.

THE annual distribution of prizes to the successful students at the school in connection with the Birmingham Dental Hospital took place, the Dean (Mr. F. W. Richards) presiding over the gathering and being supported by Mr. W. F. Haslam (surgeon at the Birmingham General Hospital) and Lieutenant-General Phelps.

In opening the proceedings the Chairman congratulated the students on the very good annual report recently presented, and said he thought the thanks of everyone connected with the hospital were due to them for conscientious work rendered, without which such an institution could scarcely go on.

The prizes having been distributed, Mr. Haslam addressed the students. After congratulating them on the successes attained, he reminded them that they were in process of becoming members of an important branch of the great healing profession, and said they were fortunate in having chosen as their field of work a branch which in one sense was young, but which had rapidly advanced to a very high position. In many ways this was to their advantage, for with growth there was always vigour, and so far as he could see there would be ample room for and good prospects for all. Some of them were taking a medical degree, or diploma, in addition to that which was to enable them to practise the particular branch ef the profession they had elected to follow ; but, whether doing so or not, they would agree that the nature aud scope of their studies must have an influence on them for good. No man could go through their course of study without having his interest aroused, his views widened, and without, perhaps, acquiring a taste for some particular branch of study. They were brought in contact with a wide field—chemistry, physics, comparative anatomy, anatomy, physiology, pathology and bacteriology. They had to acquire some knowledge of general medicine and surgery, in addition to acquiring special experience in their own department. Such a training as this must be to their advantage, and must fit them to take their place in the world. Alluding to recrea-

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tion, Mr. Haslam uttered a warning against wasting time by desultory reading. He believed one of the most serious problems we were now confronted with was the plethora of printed matter. The output was so great and so cheap that there was every inducement to read superficially and to unconsciously stifle any effort of thought, or even of memory. He suggested their reading should be well ordered and calculated to strengthen their brain power. In addition to general reading everyone should have some hobbies, and should work at certain subjects that were almost, if not wholly, outside his life's work. If the study of these hobbies took them into the open country so much the better. Sport and games of all sorts were now in the ascendant, and they should be careful that they did not command more time than was their due. While sports were most necessary and useful, and should be practised to a proper extent by all, he could not but feel there was a danger of their absorbing too much time and of diverting attention from other directions in which they could find just as much pleasure and far more instruction. With this warning he, however, strongly advocated the pursuit of sport and games as being the best means, not only of developing the body, but of developing the character and much that was best in a man.

On the proposition of Mr. A. E. Donagan, seconded by Mr. W. T. Madin, a vote of thanks was accorded Mr. Haslam for his address.

### Annual Dinner.

The annual dinner of the Birmingham Dental Students' Society was held at the Midland Hotel. The chair was occupied by the president of the Society (Mr. A. H. Parrott), and among those present were Mr. Hopewell Smith (Lecturer in Dental Anatomy and Histology at the Royal Dental Hospital, London), Mr. W. F. Haslam, F.R.C.S., Dr. Stacey Wilson, Lieutenant-General Phelps, Mr. F. W. Richards (Dean of the Dental School), and Mr. J. T. Craig (Leicester).

The toast of "The Dental Students' Society" was briefly proposed by Mr. Haslam, and responded to by Mr. W. R. W. Booth, the hon. secretary, who said the Society had reached a high-water mark during the past year, the membership now standing at 107.

Mr. Hopewell Smith, in proposing "The University and Dental School," laid stress upon the importance and advan-

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tage of the latter being associated with the former. The advantage to the school was a very great one indeed. It gave students the opportunity of mixing with university men, of having many of their lectures at the university, of getting to know the professors, and so enlarging their mental horizon. Everything was tending towards the scientific training of the dentist. Alluding to Birmingham's position in connection with dentistry, he said the city might be regarded as a pioneer, for so far back as 1839 a book was published on "Diseases of the Teeth" by a Birmingham man named William Robinson. Again, their Dental School was founded in 1858, the same year that the London school was established. If he might give them a motto it would be "Ich dien." By looking upon the treatment of patients in the spirit suggested by that motto they would feel they were of some service to suffering humanity.

Mr. F. W. Richards, responding, said the great question was, "What is to be the position of the dentist in the future"? They must have specially and carefully educated men in order to be successful dentists in the future. They must not only keep abreast with all the dental specialities, but go through the different branches associated with dentistry. The ordinary mechanical expert could never be competent to carry out the duties pertaining to the proper treatment of the mouth.

Dr. Stacey Wilson also responded on behalf of the University.

"The Dental Hospital" was proposed by Mr. J. T. Craig, and responded to by Lieutenant-General Phelps. The latter described the Birmingham Dental Hospital as one of the best equipped buildings of its kind in the country. Although the number of students in the school was only thirty, he hoped that before long they would have something like a hundred young men learning how to relieve those who were suffering from one of the greatest afflictions. The city and surrounding districts were crying out for dentists, and if young men did not come forward it looked as if they would have to establish a class for lady students. Even then the demand for dentists would not be supplied. It appeared that out of the elementary school children in Birmingham whose mouths had been "charted" 96 per cent. were found to be abnormal, and required attention of one kind or another. Out of a population of 600,000 it was therefore reasonable to assume



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that 550,000 required attention from dentists. If there were a profession which was booming, and which was only beginning, it was that of dentistry. After alluding to the decreasing size of "wisdom teeth," the speaker said there was evidently much for dentists to find out as well as cure. If ten times the present amount of money could be raised from the Birmingham public it could be applied beneficially in relieving suffering.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE Annual Meeting of the Fellows and Members of the Institution was held recently. Mr. H. Morris, president, in presenting the report, said the Council had passed a resolution in favour of the admission of women, and under the conditions by which the joint board was in existence, this had to be referred to the Royal College of Physicians. Their final reply had not yet been received, but, if it were favourable a vote would be taken of the Fellows and Members of the College by which the final decision of the Council would be largely influenced. The college had considered the question of granting a diploma in tropical medicine, and decided that this was not desirable, but, in order to give a *cachot* to successful students in that branch of medicine, they had decided to appoint accessors, and providing they had a certain veto over the curriculum, those accessors would be empowered to endorse the certificates in tropical medicine gained by the holders of the college's diplomas. With regard to vivisection (on which subject the council had passed a resolution against further alteration of the law), he was informed that all the important evidence before the Royal Commission was going in the same direction, and that though the Commission continued to sit, it was only to prevent any possible imputation being made afterwards that their inquiries had been cut short. A gift had been made by Mr. and Mrs. Bischoffsheim of £40,000 to the Imperial Cancer Research Fund, the interest on which would be available for all time in aid of cancer research work. If happily these researches came to a successful termination, that sum would still be available for inquiry and research into other diseases. On the motion of Mr. F. W. Collingwood, seconded by Mr. H. Elliot-Blake, a resolution was passed

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urging the council to use their moral influence with hospital authorities to recognise members of the college as having equal rights with provincial Scottish and Irish graduates to become candidates for hospital appointments. Several members protested against hospital authorities insisting on a degree of a British University in making their appointments and overlooking the college's diploma. A long debate took place on the right of members, as well as Fellows to direct representation on the council of the college, and a resolution was agreed to urging that a poll of Fellows and members be taken on the subject. A further resolution passed, requested the council to report as to their willingness to join the college with the university of London, so as to form an Imperial University of London, and whether they would approach the Royal College of Physicians for a similar joint action.

## BRITISH SOCIETY FOR THE STUDY OF ORTHODONTIA.

THERE has recently arisen a strong feeling amongst dentists that there are many problems connected with the causes and treatment of dental irregularities which call for special consideration and study. As an outcome of this feeling, a meeting was convened on December 5th at the rooms of the Medical Society, in Chandos Street.

A considerable number of dentists attended, among whom were Messrs. Howard Mummery, F. J. Bennett, J. H. Badcock, G. Northcroft, W. Coffin, M. Hopson, S. Spokes, Booth-Pearsall, Betts, J. G. Turner, Sim Wallace, Mellersh, Baldwin, L. Pagne, James, Lockett, and Rushton.

Mr. J. H. Badcock was voted into the chair and gave a short sketch of the manner in which the idea of the formation of such a society arose. The need of a society to study the special problem was felt to be a real one. They did not wish to act as Separatists or to be a Society of Specialists, rather they would wish to be a society of learners, hence the name they had chosen. The gentlemen present would be called upon to decide whether the society should be a branch of the Odontological Section of the Royal Society of Medicine, or should be an entirely new society.

Letters were read from Mr. Leonard Matheson, who regretted his absence, hoped that the wisest councils might prevail, and

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warned the audience against forming any "separate cult," and from Mr. Norman Bennett, who advocated the formation of a section of one of the existing societies, if possible.

Mr. Badcock then put the following two resolutions to the meeting.

First, "That a Society be formed to study Orthodontia."

Second, "That it be named The British Society for the Study of Orthodontia."

He then invited discussion on the first resolution.

Mr. Northcroft spoke strongly in favour of the formation of a Society, the exact machinery of which was not of such importance, so long as its objects were carried out.

Mr. F. J. Bennett felt disposed to have the Society affiliated to the Odontological Section of the British Dental Association.

Mr. Mummery said that the tendency of the present day was towards concentration, rather than separation, and therefore he was inclined to favour affiliation with the Odontological Section of the Royal Society of Medicine. That body, however, had no power to form a sub-section, but he suggested they might follow the example of the Pathological Section and form a Sub-Committee, under the control of the section. In reply to certain questions, he said that the R.S.M. had no funds to allocate to such a Sub-Committee and he could not say whether their proceedings would appear in the publications of the R.S.M., and of course all the members of the Sub-Committee would have to be members of the Odontological Section.

Mr. J. G. Turner was in favour of joining the Odontological Section if possible, as they would have the benefit of their fine museum, but he objected to the system adopted by the Pathological Society.

Mr. Baldwin saw many objections to affiliation. They had better start a small society, which, if it were successful, could affiliate, if desired, or if it were a failure, would not be complicated with any other society.

Mr. Spiller also advocated the utmost freedom of action.

Mr. Lockett and Dr. Sim Wallace also spoke to the same effect.

Mr. Badcock then put the resolutions separately and they were both carried.

He then read the Bye-Laws of the new Society, which were drafted upon those of the Odontological Section.

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Mr. Booth Pearsall took exception to the Bye-Laws excluding those who had any interest in patents, and several amendments were proposed to mitigate the security of the rule. On being put to the meeting they were all negatived and the Bye-Laws were all passed as drawn.

The election of officers then took place with the following result :—

*President*—J. H. Badcock.

*Vice-Presidents*—G. Northcroft, Sim Wallace, and M. Hopson.

*Secretary*—A. C. Lockett, 29a, Wimpole Street, London.*

*Treasurer*—F. W. Mellersh.

*Curator*—H. C. Visick.

*Editor*—W. Rushton.

*Librarian*—J. E. Spiller.

*Councillors*—H. Baldwin, G. Campion, and J. Tibbitt.

The meeting then closed with a vote of thanks to the chairman.

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## GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

### Winter Session, 1907.

Dr. Donald MacAlister, president, in the chair.

The eighty-sixth session of the General Council of Medical Education and Registration was commenced on Tuesday, November 25th, 1907, at 299, Oxford Street.

The following are the items of interest to our profession :

### Practice by Companies.

Since we last met, the Bills for the protection of the public by checking the abuses incidental to the practice of medicine and of dentistry by limited companies, which were introduced by Lord Hylton in the Upper House, have been considered by Parliament. As you will remember, the Bills were framed under skilled advice, and received your approval as embodying real improvements on the existing law. The Medical Bill prohibited under penalties the practice of medicine or surgery by companies. The Dental Bill sought to provide that every person, who under the name of a com-

*From whom all information may be obtained.

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pany treated or professed to treat patients, should himself be a legally-qualified dentist.

The Bills, having passed the second reading without objection, were referred to a Select Committee of the House of Lords. The Medical Bill seemed to find favour with the Committee, and being reported without amendment to the House, was duly passed, and sent down to the Commons. The exigencies of business, however, prevented its further progress in that House, and with many other measures it was dropped at the end of the session. The Dental Bill was strongly opposed in Committee. Witnesses representing companies of unregistered persons, objected that it was unjust to restrict practices which the present Law of Companies had allowed to grow up. Others, on behalf of the British Dental Association, urged that the Bill did not go far enough in the direction of restriction. It allowed dental companies to exist as commercial entities, though they could only act by means of dental operators who were duly qualified. The evidence has been published and is worthy of careful study. It illustrates at once the abuses which the Bill sought to remedy, the objections entertained by the officers of the Dental Association to anything short of the total suppression of companies in connection with dentistry, and the strength of the opposition to suppression which such companies are able to offer. In the end their lordships appeared to be influenced by the arguments of the companies rather than by those of the Association. Amendments were introduced with the object of saving for a period of years the interests which existing companies alleged; but nothing was done to make the Bill more drastic in its ultimate operation, as the officers of the Dental Association desired. Fortunately the amendments, as drafted, proved to be unworkable, and inasmuch as, apart from this defect, they seriously diminished the protection to the public which the Bill was intended to afford, it was intimated to Lord Hylton that the approval of the Council could not be held to extend to the measure in its amended form. His lordship thereupon obtained leave to withdraw the Bill and it was not further proceeded with.

Being assured that it would be your wish, I conveyed to Lord Hylton an expression of the Council's grateful appreciation of his efforts to procure, in the public interest, a useful amendment of the law, and of his able conduct of his proceedings before the Select Committee.

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The Companies' Bills Committee will meet during the session to consider what steps should next be taken to give effect to the Council's instructions on the questions referred to them.

In the meantime certain cases have been decided in the courts which may have an important bearing on the subject. They indicate that the law as it stands is capable, if fully enforced, of putting down some of the abuses which were by many thonght to acquire new legislation. In some respects the Dentists Act is more stringent than the Medical Acts ; while, on the other hand, the Companies Acts are held to give less protection than was supposed to persons who seek to use their provisions for purposes misleading to the public and inimical to its interests. The Irish Branch of the British Dental Association has been both active and successful in the prosecution of test cases wherein these important issues have been raised, and have been settled so far as Ireland is concerned.

It is much to be desired that similar cases should be brought before the Courts on this side of St. George's Channel. Were they equally successful, the effect might be that the necessity for specific legislation in restriction of professional practice by dental companies would be obviated. In view of the difficulty which the Council has experienced in procuring the passage through Parliament even of Bills that are admittedly in the public interest, such a result would be particularly welcome.

### Jurisdiction of the Council in Penal Cases.

Last May I referred in my address to certain decisions given in the Chancery Division of the High Court which touched upon the scope of your judgment of "infamous or disgraceful conduct in a professional respect," delivered in connection with an inquiry into the methods adopted by certain members of a notorious dental company. The decisions in question were subsequently reversed in the Court of Appeal, and when the cases were brought last week before the House of Lords the reversal was sustained. The Lord Chancellor, in giving judgment, put aside as immaterial the question whether, in the circumstances of the particular action, the order made by the Council should have been admitted in evidence or excluded. But he pronounced in forcible terms, and the other Law Lords agreed with him,

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that the facts proved which were those in which the Council based its judgment, did constitute "disgraceful conduct" and "professional misconduct." Thus, although the decision of the Council was not in form reviewed by the highest tribunal, the grounds of its decision were indirectly declared to be amply sufficient to justify its sentence.

### Fees of Members of the Council.

Dr. Pye-Smith moved and Dr. McVail seconded:

That the following recommendation of the Executive Committee be *adopted*, namely, "That the *Standing Orders*, Cap. XI., 8, be *amended* so as to read as follows:

"The fees for attendance at meetings of the Executive Committee and the Penal Cases Committee shall be five guineas a day, and at meetings of the Branch Council two guineas a day for each member attending, his travelling and hotel expenses being also paid."

The President, in reply to Mr. Morris, said the reason it was proposed that members of the Executive and Penal Cases Committee should receive five guineas a day, while the members of the Branch Council should receive only two guineas a day, was that the members of the former Committee met at various times of the year, when other Committees were not sitting, and the members could not attend without sacrificing two other days.

The motion was then agreed to.

### Dental Business.

The Council then received a report from the Executive Committee with reference to an application for registration by a dentist, founded chiefly on the fact that he was registered as a dentist in Queensland. This application was refused on the ground that registration under the Dental Act of Queensland, 1902, is not recognised by the Medical Council as entitling a person to be registered on the *Dentists' Register* of the United Kingdom, and that there was no evidence to show that he had obtained registration in Queensland after an appointed course of study and examination. The applicant appealed to the Privy Council under the provisions of Section 10 of the Dentists Act, 1878, against the refusal to register him. The Privy Council, having been informed of

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the Council's reasons for refusing registration, rejected the appeal.

The President, in reply to Mr. Tomes, said the principle had thus been established by the Privy Council, and no doubt similar applications for registration without Colonial examination and licence would be dealt with in the same way.

## Penal Cases.

The Council proceeded to hear the case of William Henry Roberts, registered as of 63, Lower Mount Street, Dublin, Lic. R. Coll. Phys. Edin. 1885, Lic. R. Coll. Surg., Edin. 1885, who had been summoned to appear before the Council on the charge that he had knowingly assisted certain persons who were not registered as dentists—namely, Mr. Keogh, of 4, Lower Mount Street, Dublin, and Mr. John Blake Dillon, Messrs. William-Steyn, and Mr. M. William-Steyn all of 23, Rathmines Road, Dublin, in performing operations in dental surgery by administering and offering to administer anæsthetics, and had so enabled these persons to treat patients and to engage in dental practice as if they were duly qualified in dentistry and dental surgery. The complainants were the Irish Branch of the British Dental Association. They were represented by Mr. Turner, barrister-at law. Mr. Roberts was represented by Mr. Warburton, barrister-at-law. Mr. Roberts was also present in person.

Mr. Turner, in addressing the Council, said that the facts were not in dispute in this case. Mr. Warburton had intimated to him that Mr, Roberts desired to express his regret for the infringement of the Council's rule and to say that he would take good care not to infringe this regulation in future, and he hoped therefore the Council would adjourn this case in order that it might be satisfied that he intended to obey its resolution. In no other way was the character of Mr. Roberts impugned.

Mr. Warburton stated that Mr. Roberts had been for 22 years on the Register of medical practitioners. He had a very large number of testimonials to the high professional character which he had borne all that time. He expressed regret for what was done as a mistake and by inadvertence.

The Council having deliberated *in camera*,

The President announced the decision as follows: Mr. Roberts, the Council have found the facts alleged against you proved to their satisfaction, but they have adjourned the

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further consideration of the facts proved until the next session of the Council, to be held in May. You will have notice of the consideration and you will be expected to satisfy the Council of your professional conduct in the interval.

# Legal.

## DEATH AFTER DENTAL OPERATION.

MR. WIGHTMAN held an inquiry at the Prince of Wales Hotel, Masbro', relative to the death of Alfred Ellis, aged 64, fitter, who died at the house of Mr. A. E. Slack, High Street, after undergoing treatment for his teeth. Mr. F. W. Scorah, from the offices of Mr. Arthur Neal, Sheffield, represented the British Dental Association; Mr. H. Fretwell, from the offices of Mr. W. M. Gichard, appeared for Messrs. Archie E. Slack, Limited; and there were present Mr E. Weatherhogg (Chief Constable) and Superintendent Gower.

Kate Ellis, daughter of the deceased, said her father had suffered recently from indigestion. He was rather afraid he had heart disease, and soon after last Christmas consulted Dr. Collinson with regard to his general health. The doctor told him he was suffering from indigestion. Deceased had very bad teeth, and Dr. Collinson advised him to get teeth. Witness went with the deceased to Mr. Archie Slack's. He had not been there before.

Witess said when she went to the house of Mr. Slack she told Mr. Slack the deceased had bad teeth, and had come to have them taken out. Deceased had nine teeth drawn. Mr. Slack injected something into his gums with a syringe. Witness asked Mr. Slack to give the injection. Deceased did not become insensible at the time the teeth were drawn. He got up out of the chair afterwards, and was going to wash his beard, and sat down again. Mr. Slack asked him if he felt faint, and afterwards if he was bad, and deceased said, "I will soon be all right." Witness had just previously asked him if he would have some brandy and water. Deceased got worse, and they got hold of him, and he started trying to be sick and shook violently, and died instantly.

The Coroner: You are sure that during the operation of the drawing of the nine teeth your father was sensible the whole time?

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Witness: Yes.

Questioned by Mr. Scorah, she said the deceased had been under the care of Dr. Rowthorn, who attended him on Monday. She went to fetch the medicine on the Tuesday morning. She told the doctor the deceased had been awake all night, and that he was going to have his teeth out that morning by Mr. Archie Slack. The doctor said to her, "Why not go to a proper dentist?" and she said, "I have been to Mr. Slack, and I am quite satisfied."

Francis Charles Collinson, surgeon, said he attended the deceased a year ago for indigestion, and he then complained of palpitation of the heart, which witness put down as a secondary condition of the stomach difficulty. He had made a post-mortem examination of the deceased and found the heart in a state of fatty degeneration. He attributed the cause of death to fatty degeneration of the heart, accelerated by shock from the drawing of the nine teeth. With regard to the stuff administered for the purpose of benumbing the gums, it would depend upon how much was administered. Thirty minims were equal to a quarter of a grain of cocaine, which was rather a big dose for a man of the age of the deceased. Medical men used the drug produced in a bottle (it contained alvatunder) when a patient could not stand a general anæsthetic. He should consider a medical man would be justified in using it without any assistance.

Mr. Scorah: Do you think Mr. Slack should have made some inquiries into the health of the patient before administrating a quarter of a grain of cocaine?

Witness: Yes; a medical man ought to have examined him.

Replying to Mr. Scorah, witness said the drug in the bottle produced was a solution of cocaine produced in America, and contained a small quantity of cocaine—about five grains to the ounce.

Archie Edwin Slack, of High Street, Rotherham, said he was a maker of artificial teeth and an extractor of teeth. He had been in practice for himself about 12 years, and in the business for 20 years. He had used alvatunder for the last five years. He had operated during that time on between 1000 and 2000 persons, and had had no mishap. He had injected four times the quantity that the deceased had without injurious results. He had never administered cocaine except in a mixture. He was not registered, but he was qualified

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to take teeth out. He had not passed any examinations.

Replying to the jury, he pointed out that he gave 30 minims of the mixture alvatunder and not cocaine to the deceased.

Answering to Mr. Scorah, he said he should not use the mixture produced again without having it analysed.

The jury returned a verdict that "The deceased died from fatty degeneration of the heart, accelerated by shock through the drawing of nine teeth."

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## ACTION FOR PROFESSIONAL NEGLIGENCE.

BEFORE Mr. Justice Lawrence and a special jury, has been tried an action brought by Mr. Charles Steadman Williams, manager of the tailoring department of the Junior Army and Navy Stores, to recover from Mr. Jacob Louis Wartski, trading as L. S. Wartski, a dentist, of West End Lane, Hampstead, damages for alleged negligence in the extraction of two of Mr. Williams's teeth. Defendant denied negligence. Mr. Montague Lush, K.C., and Mr. Addington, appeared for the plaintiff; and the defendant was represented by Mr. McCall, K.C., Mr. Neilson, and Mr. Goodhart.

Mr. Lush, in opening the case, said that on June 23rd, 1904, the plaintiff felt considerable pain in one of his lower teeth after biting a crust, and he therefore went to see the defendant about it. The defendant upon that occasion drew the tooth, and after the operation said that he had broken the tooth and unfortunately left the fang in the jaw. Consequently an appointment was made for two days later, when gas was to be administered and the fang removed. On attending for the second operation Mr. Williams requested that the tooth next to the one that had been removed should not be interfered with. Gas was administered, and after the operation defendant stated that he had drilled the fang to powder, but that he had been obliged to remove the other tooth in order the more easily to get at and destroy the fang. Plaintiff afterwards suffered great pain, and in February, 1906, he went to see a medical man, who told him that the fang had not been removed. As the pain increased the plaintiff went to see Mr. Turner, a Harley Street specialist. On his advice he went into a nursing home, where he underwent

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four operations, and at the last the fang that had been left in the jaw was removed and the plaintiff then got better. Plaintiff applied to the defendant for compensation, but as the offer made to him was in his opinion unreasonable these proceedings were taken.

Mr. Williams the plaintiff, was then called, and stated that the defendant offered him £40 and a complete set of teeth and that offer he refused. The expense he had been put to came to £151, Mr. Turner, the specialist, having generously reduced his fees by £40.

Mr. Turner, a surgeon practising in Harley Street, proved performing four operations upon the plaintiff at a nursing home, and at the last operation he removed a fang that had been left in, and which belonged to one of the two teeth taken out by the defendant in 1904. After the fang was removed the plaintiff got better.

Other evidence having been given in support of the plaintiff's case,

Mr. McCall, for the defence, said he should be able to prove that the defendant only operated upon the plaintiff on two occasions—in June, 1904, and February, 1906. On the first occasion the plaintiff complained of violent pain in the neighbourhood of two teeth in the lower jaw, and as it was not easy to discover which was the cause of the trouble it was the proper thing to remove both teeth. One tooth was removed in its entirety, but the other one broke, and in these circumstances the defendant tried to kill the nerve and stopped the tooth. In February, 1906, the plaintiff came to him again, and on that occasion he removed the portion of the tooth that had been left in on the previous occasion. He believed the jury would be satisfied that the tooth which Mr. Turner subsequently removed was not a portion of either of these teeth.

Mr. Wartski, the defendant, then gave evidence in support of his case.

In cross-examination witness said he did not offer Mr. Williams any sum as compensation. He took his diploma as a dentist in 1900, and had carried on business as a qualified registered dentist since. He knew the London Artificial Tooth Supply Company and was connected with it. There were two partners, himself and a Mr. Watson. It was registered under his name, and he had carried on business as an unqualified dentist under that name for some fifteen, eighteen,

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or twenty years. He did not, however, get into trouble with Guy's Hospital over it. He was a student at Guy's about eleven years ago, but after he got his diploma it was unnecessary to carry the company on as an unqualified firm any longer.

The defendant, Mr. J. L. Wartski, cross-examined by Mr. Lush.—He was in business till 1897. In 1897 he entered the hospital. W. H. Watson was not a qualified person. He made no charge for destroying the nerve. An exposed nerve could be destroyed by cocaine. The plate and extraction were all included in the fee of four guineas. The plaintiff had other dentists' artificial teeth. After the operation witness made a new plate. The mouth might not have been ready. He did not remember fitting a new tooth to the existing plate. The canine tooth had been added. The teeth did not correspond to the teeth A and B. The plaintiff was free from pain in July. The plaintiff must have had two broken fangs. The other was probably very low down in the gum. Tooth A was visible as soon as he removed the gum.

Dr. Myers, examined, said he was a D.M. Edinburgh. He was called by the defendant on July 24th, 1906, to administer an anæsthetic. The defendant said it was rather an unusual case. The tooth was complete when extracted. He thought it very unwise to extract the second tooth, which was very deep-seated. The operation was skilfully performed.

Cross-examined.—The operation was three years ago, and he was spoken to about it three weeks ago. There was nothing in particular to fix his recollection.

Mr. Pedley, examined, said he was F.R.C.S., and had been on the staff of the Dental Hospital, Great Portland Street. He had been in practice as a dentist since 1883. It was the right thing to do to extract the tooth in June, 1904. It often happened with the most skilful dentist that the tooth broke when an attempt was made to extract it. The treatment of the defendant was a proper one. What happened in 1906 was quite usual, and the defendant was justified in coming to the conclusion he did. The part of the tooth produced was a supernumerary tooth, and was no part of A. or B.

Cross-examined.—Except for Mr. Turner's ignorance, he accepted all that he had told them.

Mr. E. C. Sprawson, M.R.C.S., and lecturer at the

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Dental Hospital, examined, said in June, 1904, he did not consider there was anything wrong in allowing the tooth to remain. The defendant was quite justified in removing tooth B. He agreed that the portion produced might have been a supernumerary tooth. He had seen bicuspid supernumerary teeth in the lower jaw.

Cross-examined.—His view was based upon the correctness of the defendant's evidence backed up by Dr. Myers.

Mr. A. Wartski, examined, said he was cousin of the defendant. The plaintiff told witness that he had been told that his condition was due to improper treatment by defendant, and asked him to see defendant about it. He made an offer to plaintiff to pay him £25 out of his own pocket, but his cousin would not consider it. He never offered to compromise the claim on behalf of his cousin.

Cross-examined.—He never received a letter from the plaintiff with the words "your cousin's offer of £25." His cousin had never offered to settle the case.

The plaintiff was recalled, and stated that he saw the defendant's cousin in the Junior Army and Navy Stores, when the letter alleged to have been written by witness was referred to.

The above statement of the plaintiff's was corroborated by a witness who was present.

Mr. Lush, in replying for the plaintiff, said if the jury believed the evidence of Dr. Myers, although he was defendant's witness, then there must be a verdict for the plaintiff. The plaintiff said that the wrong fang had been taken out. The defendant had assured the plaintiff that both teeth were gone. The plaintiff believed that; otherwise he would have told the surgeon who operated upon him. If the jury believed that the defendant did make an offer through his cousin, then his evidence was unreliable. The only question was, was the letter ever written? If so, then it showed that defendant was ready to make amends for the wrong he had done plaintiff.

Mr. Justice Lawrence in summing up to the jury said a professional man had to use ordinary care and skill which was expected of him. The case made by plaintiff was that in June, 1904, the defendant broke his tooth and left a fang in his jaw and represented to plaintiff that he had removed it. The plaintiff further said that in removing tooth B he omitted to remove the broken fang. The real question was,

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was the defendant guilty of negligence and want of care? If the jury found the defendant had been guilty of negligence, then they must assess the damages.

The jury returned a verdict for the plaintiff, with £150 damages.

Judgment accordingly with stay of execution.

# Review.

*Bale's Dental Surgeons' Daily Diary and Appointment Book, 1908.*—Prepared under the advice and with the assistance and approval of many eminent members of the profession. Post 4to, cloth boards, gilt lettered, 7s; interleaved with short ruled or blotting paper, 8s. 6d. London: John Bale, Sons and Danielsson, Ltd., 83-89, Great Titchfield Street, W.

This publication still maintains its high standard of convenience and information. It is we believe, always "out of print," in a short time and improvements have become almost impossible. But this year our curiosity upon the point is rewarded by the introduction of a space cut out at the bottom of the preliminary pages as a thumb-guide to the index of patients' addresses.

# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

No notice taken of Anonymous Communications. Name and address must always be given, although not necessarily for publication.

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It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.

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British Journal of Dental Science

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# FIFTEEN YEARS' WORK AMONGST POOR LAW CHILDREN AND SOME DEDUCTIONS THEREFROM.*

By Edward Keen, M.R.C.S., L.D.S.

*Dental Surgeon to the Training Ship "Exmouth," the Kensington and Chelsea Cottage Home, Banstead, etc.*

Having been asked to write a short paper on my work amongst Poor Law children, I gladly acquiesce in the hope that the practice of the regular inspection and treatment of the teeth of all children may become universal, especially now that the Board of Education have decided to appoint a medical department "to advise and supervise local education authorities as to the manner and degree in which those authorities should carry out medical inspection."

Before I was appointed to the Training Ship, "Exmouth" nearly 15 years ago, I was told by the late Captain that it was no uncommon sight to see boys lying about the decks holding their faces, agonized with pain, their only relief being afforded by the homely applications of the Captain's daughter until such time as the doctor should come and give the *coup de grace*. After I had been at work some little time

*Read before the School Dentists' Society.



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all this was altered, and it became a rare thing to meet a boy with toothache. This was due to a course of regular inspection. We began with twice a year, now we have increased the number to three times a year. In this way I find not only the large patent cavities with exposed pulps that are so frequently the seat of abscess, but I am able to discover the commencement of disease, and by appropriate treatment, am able to save hundreds of teeth that otherwise would have been sacrificed, and this is where I consider I have been able to do most good.

To describe my method of inspection I must first explain that the complement of the Ship's company is 600 boys who are divided into six divisions of 100 boys each, each division being divided into two watches, port and starboard. I visit the Ship or Infirmary every Tuesday, and on the first Tuesday of the first month I inspect, say, the 1st Division of the Starboard Watch, and all the new boys who have joined the Ship since my last visit. If there are not many of these, I may perhaps inspect the 2nd Divison of the same Watch, making perhaps 80 or 90 boys inspected. Their names are all entered in a book by the Master at Arms, and, when new boys, I enter against their names what should be done in their mouths. If old boys I tick them off as seen and enter anything fresh that should be done, at the same time making a note of their numbers, so that in turn they may be sent over to the Infirmary to be operated on. Every Tuesday afternoon a batch of boys selected by myself is sent over to the Infirmary for that purpose. I generally send for eight or twelve boys in a batch. On the second Tuesday morning I see the 1st Division of the Port Watch and any new boys. In this way every boy is inspected once in four months in addition to his inspection as a new boy.

With regard to extractions it is not my practice to extract all teeth that are too much decayed to be stopped, only tos e

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that are I think liable to be the seat of mischief. Many are the dead teeth that I stop with quite satisfactory results.

Of course one's great trouble is to persuade children to clean their teeth. I have more trouble from this cause than any other. The collection of tartar round the roots of the teeth causes the gums to become thick and turgid, and sometimes even the seat of pyorrhœa. The same of course applies to the Kensington and Chelsea Cottage Home School at Banstead, only the method of inspection differs. There the 700 children are divided into cottages. The boys' cottages contain 40 and the girls' 25, the former being in charge of a married couple who are called the father and mother, and the latter of only a mother.

I visit here every Saturday afternoon and inspect one Boys' Cottage or two Girls', who are sent up to a room provided for me for the purpose, and as I see them I note anything to be done and the patient stays behind to be operated on after the inspection is finished. The children here are taken in in batches of about 17 at a time and kept in a Probation Ward for a fortnight, and I devote a whole afternoon to the attention of each batch whilst in the "Pro." as the Ward is colloquially termed. I do not suppose my methods of treatment differ from that of others. I use Rogers' Copper Amalgam for back teeth and C. A. & Sons' enamel for front ones.

I am often exercised in my mind as to how much filling of temporary teeth should be done, but must admit to not doing much, perhaps not as much as one ought. Of course all instruments and materials are provided by the Institution.

I may here put in a word the Doctor of the "Exmouth" has to say with regard to the inspection and treatment of the boys' teeth. He says "During my five years association with the Training Ship "Exmouth" I cannot recall any instance of a boy's admission to the Infirmary for dental con-

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ditions, and this I attribute entirely to the regular inspection and early treatment adopted."

Let us now consider the question of children's teeth from a public health point of view. What are these children going to become? Is it not our duty to help them each one to serve the State in his individual capacity? Let me quote a case of the benefits of dental inspection and treatment.

Before I was appointed to the School Board Training Ship "Shaftesbury" I was asked by the Captain (whom I knew by visiting the "Exmouth") to come and see some boys he wished to send up for the Royal Navy. I went and spent the day on board and inspected and treated 13 boys all of whom were sent up. Of these 12 passed. Such a percentage had never been known before. On a subsequent occasion I visited and treated a little batch of 6 boys, *all* of whom passed into the R.N. This led to my being appointed permanently until the ship was done away with about two years ago. At the "Exmouth" we never expect now to get a boy rejected from the R.N. for bad teeth, and we send up about 100 every year, but what would they be worth if their teeth were not attended to; and the examining Medical Officers are more strict now than they used to be. A boy may not have more than six defective or deficient teeth, and must have four opposing molars, and I have got the Examining Officers to admit stopped teeth as *not defective.*

I think the Army authorities are not quite so strict in their rules and our band supplies a good many musicians to Army bands, and so does also our band at the K. and C. School at Banstead, and here let me mention another point on this subject. Boys have passed into Army bands who have broken a front tooth, and been supplied with an artione that has enabled them to play wind instruments. But we must not forget that all boys are not going to be soldiers or sailors and that the usual percentage of children are girls.

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Many of our boys are apprenticed to trades, and our girls are trained for domestic service. I am speaking now of course of a mixed school like Banstead. Are we not to take as much pains to train, so to speak, our children's mouths so that they shall have as much freedom from pain in after years as those who have to pass an examination?

And our girls! Is it not important that irregularities of front teeth be corrected that they may present a fair appearance and command a better wage than a girl with a repulsive looking mouth would command, also are we not preparing for a future generation of mouths with good sound teeth?

But how is the general health of the community effected by the want of proper care of the teeth? Ask any medical man the cause of 9-10ths of the dyspepsia he is called upon to treat, and he will reply "bad teeth." It is caused by the want of masticating power. And there is even a more insidious disease which may almost be called blood poisoning caused by the secretion that issues from the gums around bad stumps and from decayed teeth, and is being constantly swallowed. These are one or two of the diseases that are the sequelæ of bad teeth, to say nothing of neuralgia, abscess, etc., which are so to speak local effects.

I wish we could get the authorities to be a little more particular as to whom they get to attend to the teeth of recruits. I have just heard of a case where an unqualified although registered dentist, is employed for that purpose. Surely there are plenty of men who have spent money and time upon education so as to qualify themselves for the work they have undertaken, who would be glad to do the work for the army.

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# THE PREPARATION OF MUMMIFYING PASTE.

By B. Bennette, L.D.S.Edin.

Many men nowadays, in order to avoid the time and strain involved in the removal of every particle of pulp matter from fine and tortuous canals, have adopted he expedient of converting the pulp tissue in the aforesaid canals into a sterile mass, by means of various agents. Among the older drugs used were oil of cinnamon, oil of cassia, mercuric chloride, silver nitrate, iodoform and tannic acid. These agents served their purpose in a more or less satisfactory way, the great objection to them all, with the possible exception of iodoform, being the staining of the tooth following their use.

The modern paste is composed of ingredients which by reason of any absence of staining of tooth substance renders it possible, though scarcely advisable to use it in anterior teeth. Wherever it is possible to remove the entire pulp this should be done, and as a rule it is simple enough in the six anterior teeth of both jaws. Total extirpation and thorough root-filling still remain and will ever be the best method of treating devitalised teeth.

The following preparation is not a cure all mummifier, "abscess cure," pulp capper and root filling all rolled into one.

The writer has no faith in universal salvation for all and sundry conditions embodied in any one preparation. The basis of this paste is the old formula of Dr. Sorderberg—viz., dried alum, zinc oxide, thymol and glycerine. These agents are in themselves when carefully compounded, sufficient as a rule for mummifying purposes. Take them in order,—

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alum, when dehydrated by heat, is an excellent dessicating agent, it will abstract water from animal tissue and yet will not become deliquiescent, as would be the case with calcium chloride. It causes a peculiar dragging sensation when placed in the canal of a tooth containing pulp tissue, even though this has been devitalised by means of arsenious oxide.

This sensation does not persist for any considerable length of time, and as it does not amount to pain, it needs no remedy. It generally subsides in three or four hours. Zinc oxide is used in preference to other powders in that it is of a pure white colour, and also because, in the event of any sulphide being formed, it also is white ; thus the factor of staining is eliminated.

The commercial article should be used, not the calcined oxide, such as is used in zinc oxyphosphate cements.

Glycerine is employed as a binding agent, and is particularly useful as possessing considerable penetrating powers. Thymol is the antiseptic ingredient. It is bland and harmless, possesses good antiseptic qualities, and above all, is persistent, There seems no good reason why, if a perfect filling be placed in the cavity of the tooth, a thymol root filling should not last for the patients' life-time, and maintain the canal of the tooth in which it is placed in a perfectly healthy condition.

This then is the paste; now we come to a further agent, which should be always incorporated. As has been said, the four previously mentioned agents are as a rule sufficient, but to make assurance doubly sure, formaldehyde in one of its forms should be added. It occurs in hree forms—gaseous, liquid and solid. It is of course impracticable to use it in a state of vapour, the liquid form is not convenient, so we must fall back upon the solid. Solid formaldehyde is an allotrope of the gas, it is obtained by evaporating the solu-

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tion of the gas in water. Trioxymethylene is its correct name, but it is commonly known as paraform. It is a white powder and is very slowly volatilised at body temperature. Here lies its value—when it is included in the paste, its action is persistent for same time, and as it is efficient as an antiseptic in the dry (gaseous) state, it supplements and intensifies the action of the thymol. One per cent. is quite sufficient strength, anything over being a menace to the future welfare of the tooth, that is, when it is sealed up, and left in permanently. Undoubtedly this method of mummification is of great value, but it must be used with care and discretion. It must not be regarded merely as a time saver.

When possible remove the pulp, when impossible, mummify.

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THE Odontological Section of the Royal Society of Medicine is prepared to receive applications for grants in aid of the furtherance of scientific research in connection with dentistry. Particulars and forms of application will be sent by the honorary secretary, Scientific Research Committee, Odontological Section, Royal Society of Medicine, 20, Hanover Square, London, W.

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AT the last meeting of the House Committee of the Incorporated Glasgow Dental Hospital, it was reported that the number of patients during December was 839, this being 203 in excess of the number for the same month of last year. It was also reported that of the operations 664 were conservative, the number of extractions being 205. At the same meeting Dr. John W. Renton was unanimously appointed as an additional anæsthetist to the hospital.

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British Journal of Dental Science

LONDON, FEBRUARY 1, 1908.

# THE GENERAL MEDICAL COUNCIL AND REPRESENTATION.

The General Medical Council, by the Dentists' Act, of 1878, is given the control of the Dentists' Register. To it is entrusted the registration of dentists, from whom it receives fees for the same; it can institute prosecutions against those who infringe the Act; it is obliged to issue correct copies of the Dentists' Register at least once a year, and the Government supplies over eighteen hundred copies of this Register to the different Courts of Law all over the United Kingdom; it can erase the names of those dentists from the Register who have been convicted of crime or who have been found guilty of disgraceful conduct, and it can restore the names of those whom they consider worthy of such restoration; it has power to require from the various medical authorities such information as it may require as to the course of study and examinations these bodies exact from students for their diplomas or degrees, and any persons deputed by it may be present at any such examinations; if the curriculum and examination does not appear to be satisfactory it has the power to represent the same to the Privy Council, which may thereupon take the necessary action; it has control over the medical board and has the power of dismissing the members of such board, besides other powers and privileges, such as the recovery of penalties and the disposal

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of fees for certain purposes. These are large powers which vitally affect us as individuals and as members of the profession, and yet we, as dentists, have no voice, no vote in the matter. True, there is a dentist on the Board, but he is not in practice, and he is not elected as our representative; he is a nominee of the Crown. We have the highest regard for the character and attainments of Mr. Tomes, and we are very glad he is on the Council, but this does not affect our position which is founded on the principle that we are not directly represented, although we have to pay our dues and abide by the decisions of a body which does not and cannot know sufficiently intimately our wishes and aspirations. It is only necessary to remind our readers of the late abortive piece of legislation introduced into the House of Lords. This was fathered by the Medical Council without any consultations with the dental profession, which was almost unanimously opposed to it.

We have, on many occasions, pointed out the advantages to the Profession derived from the association with the General Medical Council but we have also alluded on former occasions to the wish for representation. If means could be found for such a provision, it would go far to remove one of the arguments in favour of the substitution of a strictly Dental Council. It is, we believe, the hope of those who favour the International proposal for a minimum curriculum and examination in all countries, that such a Dental Council may be entrusted with Dental Educational affairs in this country. It would probably be more amenable to the wishes of such "Reformers" than would the present General Medical Council.

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DENTIST INJURED.—Mr. Boodle, a Gloucester dentist, was riding in a motor car with several other gentlemen, and when near Cheltenham the car skidded and collided with a waggon. Mr. Boodle was thrown on his head and received serious injuries.

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RATS AND THEIR TEETH.—Mr. H. Pearce, of Colebrook, Devonshire, has found a curiously marked stone in the middle of a wheat rick, and geologists who have seen it adopt his suggestion that the markings on the stone were caused by rats using it to grind their teeth, which, otherwise grew to an inordinate length. Mr. Pearce says rats sometimes starve owing to their teeth getting too long,

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FREE TRADE AND DENTAL INSTRUMENTS.—"Dentist" writes to the *Pall Mall Gazette*:—"A few days since I received a catalogue from Solingen, in Germany, with the heading in large type. 'No duty on Instruments. Last year we sent out 800,000 Dental Instruments of various kinds; this year there shall go out one million five hundred thousand!!!' This will give the cue to the Free Traders when they hear of the suffering and want existing at Sheffield. The cuckoo cry will be 'Over-production.' There will be sufficient sent by the Germans to supply the demand for many years, as these instruments, I may say, last for ever."

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ADDRESS ON "SCHOOL DENTISTRY."—The above subject was the theme of an interesting address given by Mr. J. C. Oliver, L.D.S., president of the British Dental Association, in the Lesser Andrews Hall, Cardiff, to members and friends of the local I.L.P. Mr. W. H. Murray presided. Mr. Oliver congratulated the I.L.P. on being the first of the political parties to seek information on the subject. He said that educationists in caring for the mind were apt to forget the earthen vessel which held it. Our educational system had a great deal to do, he believed, with physicial deterioration. In the past, for example, no notice was taken of impure air. The miner's lamp went out when the air became dangerous to breathe: he oftened wished that air blackened when it became impure to warn us of its danger. Our teeth of to-day were not so good as those of our forefathers. A Bridgend gentleman recently unearthed 11 skulls, and only

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one showed any loss or sign of decay of teeth. A friend of his had examined 100 boys in a truant school, and not one of them had perfectly sound teeth. If we could obtain complete statistics it would be found, he thought, that not more than one or two in a hundred people had, teeth in a condition fit to perform their function. Good teeth meant good health, and strong healthy citizens were the nation's greatest asset. Care was most necessary between the ages of 7 and 16. Fortunately that was a period when children were in a position best to be attended, as then they were at school. To preserve the teeth at that age was a simple and almost painless operation. Such an important matter should not be left to the whims and fancies of parents but should be undertaken by the State. Other nations, Germany, the United States, and even Japan, were far ahead of us in the care of the health of school children, especially in the matter of dentistry. As to the expense, that was small as compared with the upkeep of infirmaries, many of whose patients were there primarily through rotten teeth. It was a national matter, and if our statesmen wanted to practise economy let them practise it in other directions. In conclusion he urged the Labour party to put this on their programme along with their other excellent proposals for reform.

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Attacked by a Stag.—Mr. Henry Menmuir, dental surgeon, Edinbnrgh, had the alarming experience of being attacked by a stag in the vicinity of Laurencekirk. He left Marykirk on his bicycle, and was wheeling it along near Glendye when suddenly a stag galloped up and charged him in the abdomen with its horns. Mr. Menmuir was thrown on to the embankment at the roadside amongst the snow. He was unhurt, and soon regained his feet. Being attracted by the noise of the stag passing her house, a woman came along from a farm near by, and in this house he adjusted his cycle, which was slightly damaged. He afterwards resumed his journey to Banchory, and felt none the worse of his unique encounter. The stag continued its mad career along the road, and was soon lost to view.

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# Abstracts of British & Foreign Journals.

## DISCUSSION ON DENTAL DISEASES IN CHILDREN.

Dr. Edmund Cautley (London), attached great importance to the hereditary predisposition as a potent cause of malnutrition of the teeth and subsequent liability to dental decay. The delicate, tuberculous, syphilitic, or alcoholic woman is unlikely to have a healthy child with absolutely sound teeth. Her diet during pregnancy and lactation was of great consequence. After the child's birth there seemed little prospect of improving the temporary teeth by diet, but the development of the second teeth was undoubtedly influenced thereby. Anything, whether unsuitable diet or illness during early life, might interfere with nutrition and affect the development of the permanent teeth and render them liable to change. The white bread of the present day was more digestible than the coarse bread of former times, and probably more nutriment was absorbed from it. Subsequently to eruption, the decay of the teeth depended upon fermentation in the mouth due to bacteria, and could only be guarded against by thorough cleanliness. Digestive disturbances undoubtedly helped to cause caries, but caries more frequently caused disorders of the alimentary tract and even blood affections. It was just as important that dental surgeons should send their cases to physicians for treatment of the general health as it was that physicians should send the children to the dentists for dental treatment. It was important that useless decayed temporary teeth should be removed.

Dr. J. A. Sutherland (London) did not find himself in agreement with the last speaker, particularly as regards the food question, which he regarded as most serious. He was inclined to consider the effect of food upon the teeth as of less importance than the effect of foods upon the stomach, thereby promoting disease of the teeth from fermentation and other changes of the stomach.

Mr. K. W. Goadby (London) differed a good deal from those speakers who were inclined to ascribe an important rôle to gastric fermentation in the production of dental caries.

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The general phenomena of dental caries were well known, and the gradual removal of the lime salts of the tooth due to acids engendered by fermentation had for a long time been recognized. Why then, should the effect of the stomach be called in aid? And if gastric and gastro-intestinal disturbances influenced the teeth, what was the agency and what were the methods by which such diseases operated? If the statement could be substantiated by detail of the method of operation, well and good; but, so far as he was aware, there were no experiments or observations extant which showed that any alteration of the saliva or buccal secretions took place which influenced dental caries. Mr. Turner had referred to the fermentation of carbohydrates, polysaccharides, and monosaccharides, and had cited the latter as most easily fermentable, the former as most resistant; but another large class of carbohydrates, the disaccharides, required mention. Maltose, the disaccharide formed by the action of hyaline on starch was easily fermentable by mouth bacteria, whereas cane sugar took much longer; thus, 10 c.cm. of neutral glucose or maltose solution gave an acid reaction in five to six hours, whereas cane sugar, even with an organism attacking it, took twenty-four to forty-eight to produce the acid reaction. Lactose was another sugar which was somewhat refractory to mouth bacteria. The importance of these facts in relation to sweetmeats and sugars generally was obvious, and required no further comment. Another point by no means sufficiently emphasized was that the common diseases of the mouth which might influence the health of the child required to be divided into those attacking the hard dental tissues or teeth, and those which involved the soft parts of the mouth, such as the gums and mucous membrane; these latter were by far the most toxic; the factors concerned in dental caries rather opposed the formation of toxin (acidity), so that dental caries was important rather from the mechanical destruction of the masticatory efficiency, and its promotion of gum inflammations was a secondary matter. In determining, therefore, the influence of a diseased condition of the mouth upon the general condition of the physiology of the body, it was necessary to determine if the mouth condition was one or the other or a combined condition of caries and inflammation. That mouth inflammations, pyorrhœa, had a marked influence in pregnancy was certain; in one case especially a pregnancy complicated with pyorrhœa, was followed by very slow

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recovery, subinvolution, etc. Preceding and during a subsequent pregnancy the pyorrhœa was treated by innoculation with vaccine, and the second pregnancy was not only followed by rapid recovery, but the child was in every respect better developed. The innoculation of vaccine during pregnancy had no deleterous effect, even up to the eighth month. Ulcerative stomatitis in children and pyorrhœa alveolaris in adults had a similar bacteriology, as far as one could judge at present, while the character of the discharges were histologically the same. There was little doubt that the two diseases were manifestations of the same infecting agent.

Dr. A. W. Baker (Dublin) was able, from personal observation, to confirm Mr. Turner's statement as to a traumatic origin of hypoplasic teeth, and also had seen several cases where whooping-cough could be assigned as a cause, and wished to add influenza as a factor. Hypoplasic teeth were not, as a rule, more prone to caries, as it was in mouths which exhibited these damaged teeth that caries was most frequently arrested. He was doubtful about the occurrence of unilateral syphilitic teeth, as he had frequently observed unilateral markings in cases where there was an absence of any syphilitic history. With regard to anæmia being caused by caries, he was inclined to think that perhaps anæmia was frequently responsible for a sudden onset of caries in unusual sites, and in such instances had referred the cases to their physicians, who confirmed his observations.

Mr. R. Denison Pedley (London) said: When we seek for causes of the destruction of the teeth we are not confined to the skulls of prehistoric man. There are people living from whom we seek our types of healthy mouths and teeth free from decay, and they lead us to believe that in civilzation and all that the word implies the causation of dental disease may be found. A Japanese woman lives in fresh air, has the simplest food, and the loosest of raiment. Such living ensures good temporary teeth. The child is fed *naturally*, and is also brought up under natural conditions, having therefore the best conditions for healthy, permanent teeth. How different is the condition of a working woman in our present civilization! Nurtured in poor air, partaking of artificial food, and often going to the factory to earn her daily bread. Her children are brought up under similar conditions. Here we have the foundation of poor temporary

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teeth. Her infant is not nourished on natural food; and, subjected to the mother's environment, the foundation is laid for defective permanent teeth. As pointed out by my brother, Dr. Pedley,[1] of Rangoon, when the children of Eastern people are brought into the towns and fed on European diet, the teeth commence almost at once to decay. There is a selective influence we know, and weak children in the East die more rapidly than in the West; but Dr. Cunningham,[2] the anatomist, has stated that even the children of the poor—except when suffering from disease engendered by vice, namely, syphilis, etc.—have a tendency to be born healthy. As for effects, the main one is lower vitality, and all that it engenders. Once the vitality is lowered in child or adult, a very wide door is opened for many diseases to enter. The best constitutional treatment is natural food and wholesome environment. As local treatment hard foods need not be carried to extremes, but bones should be given to exercise the jaws. Extraction of temporary teeth is to be practised whenever the child cannot eat, the nerve is exposed, or the pulp chamber a septic mass; but much can be done in the early treatment by perfect cleanliness and the local application of nitrate of silver or lunar caustic. Systematic treatment from the schools must be a national affair. Diseases of the teeth, like other diseases, must be sought out, and not left to declare themselves.

Mr. W. R. ACKLAND said: There appears to be agreement that the first two years of a child's life are most important, in regard to the teeth—but mainly of the second set, the condition of the first being already fixed. That being the case, the responsibility rests more with the parent, the nurse, and the doctor than with the dentist, who does not see them. The medical profession must educate the mothers and nurses as to dietary and cleanliness. I find that children are given milk biscuits or sweets in bed after the teeth have been cleaned, which is very pernicious. From my own observation of cases, I believe carbolic tooth powder to be harmful. I should like the views of others. I see children in a healthy village with all the local conditions favourable to decay, such as want of cleanliness, etc., and yet the teeth do not decay. I therefore have come to the conclusion that their

[1] BRITISH MEDICAL JOURNAL, July, 1906.

[2] Interdepartmental Committee on Physical Deterioration.

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resisting index in regard to decay is high owing to their surroundings.

Dr. G. B. Brown (Bacup) stated that the teeth of the agricultural labourer's children in Lancashire were, according to his own personal observation, much better than those of the dwellers in towns. He also described a stained condition of the teeth of workers in certain factories, which were predisposed to decay, owing to the effects of zinc sulphate. The decay was almost tidal in character in these cases.

Mr. C. Edward Wallis (London) said: I wish first of all to make a few remarks on the relations between dental disease and epilepsy. As Dental Surgeon to that part of Darenth Asylum in which are gathered together a large number of epileptic children. I have had unusual opportunity of making investigations on this subject. Up to two years ago these children had had no dental treatment or supervision of any kind, and at that time, as now, a careful detailed record of the incidence and severity of fits had been, and is, recorded in a book devoted to that purpose. When appointed to this institution, I had made a careful examination of the teeth of these children and found a large amount of dental caries, though I am bound to say that on the whole these children display better teeth and jaws than the average members of the same class of the community as seen in public elementary schools. Since my appointment to this institution, now nearly two years ago, these epileptic children have been treated in the drastic way so ably advocated by Mr. Goadby and Mr. J. G. Turner—that is to say, these children have been freed from every cause of dental reflex irritation, so that now, as regards their dental condition, they are quite healthy. Following on this I have made careful inquiries into the incidence of fits now as compared with the period before the initiation of dental treatment, and I am bound to say that the diminution in the number and severity of fits as shown by these records is practically inappreciable. It seems to me, therefore, that we must exercise some degree of caution before we can regard as proved what Dr. Still has told us of the teaching of Dr. Ramskill and Sir William Gowers on the intimate relationship between dental disease and the incidence of epileptic fits. Next I wish to make a few remarks on the



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relation between dental disease and physical development. For a considerable period last year I was engaged in making a detailed examination of the mouths and teeth of the children in a representative London County Council school—namely, the Michael Faraday school in Walworth. I designed certain charts for the purpose, which not only displayed the exact condition of the teeth but also recorded the physical development of the children as shown by height and weight, and carefully going over these charts and comparing the amount of Dental disease with the height and weight and compared with that of the average of the children born in the corresponding year, I found that in the vast majority of cases those with the worst teeth showed a proportionally bad physical development. Next I endeavoured to find the relationship, if any, between the worst dental cases and their intellectual attainments as shown by their position in the school. For the purpose I selected the worst cases of oral sepsis, and sent their names to the head master of the school asking him to let me know the position of these children as compared with the average ones—that is to say, those born in the same year. Mr. Marshal Jackman, the head master, to whom I applied, gave me every assistance, and supplied me with the information, with the result that I found that in nearly every case these children were below the average, several of them being as much as two standards below their proper position. These observations seem to me to show clearly the necessity of proper attention to the dental condition of the children if we desire to improve their physical and intellectual condition.

Mr. Sidney Spokes (London) said: With respect to the incidence of hypoplasia, I published some years ago statistics which satisfied me that amongst children who were better fed during the first three years of life there were fewer cases than amongst the very poor who were found in parochial schools afterwards. The records also showed that in the majority of cases the upper lateral incisors escaped, thus proving that the calcification of the canine commenced before that of the lateral. In the case of the more rarely-found hypoplasia of the temporary teeth, it has seemed to me that the excessive vomiting of pregnancy sometimes met with might be a possible factor. With regard to the modern fashion of white bread, if it is true that the baker is able to obtain a larger number of loaves from a sack of flour ground

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with steel rollers, it seems hopeless to expect him to encourage the use of bread made from stone-ground flour. With regard to treatment, Dr. Still and others complain that dental surgeons are averse from the removal of decayed teeth. I think I may assure them that amongst those of us who take a wider view of disease than the saving of one or even many teeth provides, there is a strong feeling in favour of extraction whenever there seems a probability or even a possibility of danger to the general health of the patient. At the same time it is only right to say that in many cases the temporary teeth may be made safe and functional by "stopping," and in the case of superficial decay by the use of nitrate of silver. I agree with the view expressed, I think by Mr. Turner, that the dentine of temporary teeth is, as a rule, far less sensitive than that of permanent teeth, and this permits of the excavation necessary for inserting "stoppings." As to prevention, I have long held that the greatest mischief is done during sleep, and the teeth should at least be sent to bed clean. The early discovery and prompt treatment of decay can only be secured by systematic periodic examination with dental mirror and probe, and if the teeth can be kept under control until adult age is reached, it is frequently found that the tendency to decay is very considerably modified.

Mr. F. Coleman (London) said: The subject of children's teeth brought forward at this meeting opens up such a large subject that I should like to confine my remarks to a few points. The subject of the feeding of children has been fully gone into both by Mr. Edmund Owen and others. In young children up to the age of eight years or so living in poor districts and under bad hygienic conditions the lymphatic glands are frequently found enlarged in association with carious teeth. How many of these lymphatic glands were tuberculous or ultimately became so it would be interesting to know; however, most of these patients were referred to a physician after their mouths had been put into a fair condition of healthiness. I found that among young children attending at a London hospital the cervical lymphatic were enlarged in over 90 per cent. of the cases, and were almost invariably palpable. Dr. Still mentioned habit-spasm in which irritation of the nose, eyelids, blepharitis were associated with carious teeth. I should like to throw out the suggestion whether the irritation of the nose and

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eyelids may not have been due to a staphylococcic infection from the mouth through scratching these parts after the child has previously put his fingers into the mouth. I am quite in agreement with Mr. Owen, Mr. Turner, Mr. Goadby, and others as to the importance of extracting all carious teeth causing pathological changes in the tissues around. In fact, it is doubtful how far the saving of pulpless teeth should be carried, seeing how invariably the tissues around them are in a diseased condition—for example, chronic periostitis, osteitis, sinuses, etc.

Mr. J. F. COLYER (London) said: In my small contribution to the discussion of this important topic I am going to confine myself mainly to the question of treatment. With the various speakers I entirely agree that much may be done by periodical visits to the dental surgeon and timely filling of cavities, etc. Speaking from a general point of view, the tendency, I think, has been for the general practitioner to underrate and the dental practitioner to overrate the value of the teeth. The most important point to keep in view is that children's mouths must be rendered functional, and if that is done they will probably be kept clean. First, then, I would insist upon the importance of proper nasal breathing. Oral breathing tends to persistent gingivitis of the gums in the front of the mouth, with the sequelæ—caries, suppuration, etc. In the past the part played by oral breathing in the production of a dirty mouth has been underestimated; but of the important part nasal breathing plays in rendering the mouth functional there can be but little doubt. I might mention in this place a sign of mouth-breathing that is often overlooked—I mean a slight gingivitis of the gums covering the incisors, the gums at the back of the mouth being healthy. I regard this sign as almost diagnostic of mouth-breathing. With regard to conservative treatment, much may be done by filling providing the pulp of the tooth is not exposed. In cases where the pulp cavity is exposed I am inclined to think that extraction is nearly always the better line of treatment. Indeed the only instances when one is inclined to adopt conservative treatment are in the cases of second deciduous molars in children under the age of 6—in other words, in cases where the first permanent molars have not erupted. I fully appreciate the fact that the large majority of practitioners do not agree with such radical treatment, but the impossibility of

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thoroughly treating pulp chambers in children and all too frequent subsequent suppuration incline me to the opinion that by extraction we are more likely to ensure the mouth being rendered functional. The cases, however, which demand most serious consideration are those so commonly seen in hospital practice, where child after child is brought for treatment with the majority of the deciduous molars hopeless wrecks. If the first permanent molars are in position, the best treatment seems to be the removal of all the decidous molars. This has the advantage of removing all sources of sepsis and of isolating the first molar — a point, to my mind, of the greatest importance when one considers the value of this tooth in mastication. I do not hesitate to remove sound deciduous molars if their antagonists have been removed. Perhaps I can make my view more clear by giving one example. Suppose the right maxillary deciduous molars and the left mandibular molars are unsaveable and their removal is called for, then the remaining teeth—namely, the right mandibular and the left maxillary molars—are rendered functionless and can serve but little good purpose ; indeed they will harbour food, and so prevent the mouth being kept naturally clean. The removal, then, of all deciduous teeth not functional is called for if we hope to render the mouths of children clean. It will be urged that such treatment robs the child of masticating power, but such teeth are useless as far as the function of mastication goes, indeed they render the first permanent molars functionless, because a child with tender teeth " bolts" its food and cannot chew. It will be urged that the removal of the deciduous molars allows the first permanent molars to come forward, and so cause in the future crowding of the anterior teeth. With regard to this I would point out that such travelling forward of the permanent teeth occurs mainly in mouths where the growth of jaws is interfered with by want of function either due to insufficient mastication or lack of nasal breathing. From observation—but I express myself guardedly in this respect—I am inclined to think that if by removing the deciduous molars you can render the first molars functional, the growth of the jaw will be stimulated, and room made for the development of the second and third molars, with no forward pressure from these teeth, and, with the first molars occluding correctly, there will be little if any forward movement. But granting that the treatment of extraction

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suggested does cause a moving forward and subsequent crowding, the removal of four teeth will easily alleviate the condition. One has to weigh in the balance the loss of four teeth against the constant presence of oral sepsis and all its sequelæ. In my opinion the former far outweighs the latter. Still further, one must always remember that even if the deciduous molars were retained with the object of preventing the moving forward of the molars, it is more than possible that the removal of both to relieve crowding would be required, as in such an individual some interference with the development of the jaws would probably have taken place. In children, where the first molars have not erupted, the removal of the sound antagonistic teeth should be retained until the permanent teeth have erupted, but no hesitation should be made about the removal of deciduous teeth that cannot be rendered aseptic. In cases where the deciduous teeth are decaying on all surfaces, such as occurs from the sucking of sugar bags or the constant presence of an easily fermentable carbohydrate on the surfaces of teeth, a considerable improvement can be obtained by careful regulating of the diet and cleansing of the teeth combined with local treatment of the teeth. For the latter purpose no drug acts better than nitrate of silver, and this should be applied to all the carious surfaces at least once a week until the dentine shows signs of hardening. The arrest of the condition can also be applied by the regular use by the parents of spirits of wine and an alkali. I do not think that the public fully appreciate the important part diseased teeth play in physical deterioration. The outlook is, however, not so black as some would lead us to believe; the deterioration has been rapid during the last forty years, but now we are beginning to look for and find causes, and adopting more rational treatment, I believe the improvement will be just as rapid. It is a deterioration and not a degeneration.

Mr. J. H. Gibbs (Edinburgh) said that in the Physiological Department of the University of Edinburgh Professor Schafer had initiated an investigation into the influence of diet on the nutrition of rats. In general the result was to show that an improper diet produced in these animals most striking changes in practically all the organs excepting the teeth, which macroscopically and microscopically might be said to have suffered no detriment. Hence the question was raised as to the proportion of im-

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properly-fed children who showed evidence of this in their teeth later on. The speaker was at one time inclined to believe that the proportion was a large one, but possibly this was not so. When one came across patients with well-formed dental tissues one was not so likely to ask questions as to the early life of the patient. Possibly some members who were attached to children's hospitals might find it of interest to collect evidence on this question.

Mr. BENNETT, whilst in agreement with much that the reader of the paper had said, to the effect that hypoplasia resulted in the production of fissures, and was an active cause of dental caries, thought that by far the most important factor in the production of caries was local acidity. He disagreed with the practice of wholesale removal of teeth for the relief of caries. He considered it was the province of the modern dentist to save the teeth, and to spare no effort to discover by research the exact causes of decay, to find means to restore the teeth to usefulness, and by instruction to parents to give more attention to the cleansing of the teeth of their children. In very young children it might be advisable to apply to the teeth, for the purpose of neutralising any acid, a paste of precipitate of chalk 5 or 6 parts to 1 of gum tragacanth, this to be rubbed with the fingers between the teeth at night time, and brushed away in the morning.

Mr. LEWIN PAYNE (London) said that he wished to refer briefly to three points in the subject under discussion. In the first place, the greatest stress should be laid on the importance of investigating and treating the mouth and teeth of children very early in life. Whilst much had been accomplished and was still being carried out in inquiring into the teeth of school children, statistics had abundantly proved that in most cases by the time a child had reached the age of school life the mischief had begun and in many cases was well advanced. To deal with this question at all effectively it was necessary to consider not merely the condition of the mouth in infancy, but also the whole history of the intrauterine development of the teeth. Then in connection with hypoplasia of the teeth, to which Mr. Turner referred somewhat fully in his opening remarks it was well to empasize the essential difference between the hypoplasia of the so-called "stomatitic" or "mercurial" tooth and the hypoplasic teeth of syphilitic and acute inflammatory origin. In the one case the tooth had its enamel defective to a greater or a

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less extent, and ordinarily the dentine was involved only to a slight degree, whilst in general form and shape the tooth might be well developed; but in the case of the true syphilitic tooth one found a tooth not only structurally defective with regard to its dentine and enamel, but in its whole form and shape that of a stunted, ill-developed tooth of feeble implantation. He believed that in the case of the so-called "stomatitic" tooth the trouble arose from a general condition affecting the tooth subsequent to the commencement of calcification, but prior to the complete formation of the tooth. The stratified manner in which these teeth were affected with lines in different teeth corresponding with the dates at which calcification proceeded, seemed to indicate that this was so. That the "stomatitic" tooth was not confined to the permanent series could be proved by the specimens of temporary teeth to be seen in the Dental Section of the annual Pathological Museum. In regard to treatment, Mr. Payne said temporary teeth had been far too much neglected in the past. They required the same amount of attention as the permanent series of teeth. Reference had already been made to the tendency of dental surgeons to carry conservative principles too far, and there was little doubt that a more radical treatment would in many cases be far more beneficial to the child. In conclusion, he urged that the functional activity of both jaws and teeth should be maintained, if possible, but that in any case the mouth should be kept free from oral sepsis.

Mr. Russell Barrett said: I have nothing much to say on this subject, as everything has already been said by previous speakers. I was particularly struck with the fact that neither of the readers of the papers made any allusion to the condition of the mother whilst the child was *in utero*. The development of the fœtus must of necessity have a great influence on the temporary teeth, and if the temporary teeth are imperfect, and decay early, the permanent teeth are bound to suffer. To my mind, the cause of caries in children's teeth is nearly always due to improper feeding, especially in the first two years of life. At the Royal Dental Hospital, of London, Mr. Turner and I, on making inquiries from the mothers, nearly always found that the children with especially bad teeth had been artificially fed. The treatment of caries in children had been a great difficulty, and for years I have practically

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only striven to save the second deciduous molar. We were taught that the retention of the temporary teeth was of great importance in avoiding irregularities of the permanent teeth, and I cannot quite forget that teaching. Although I quite agree with Mr. Colyer that the extraction of diseased teeth is very necessary under certain circumstances, still I cannot go as far as he does in advising the wholesale extraction of temporary teeth. It must be very difficult to find a child of 3 or 4 years of age who has only the four incisors in both jaws, and I still think that a number of diseased temporary teeth can be properly filled and saved.

Mr. JAMES MILLIGAN (Manchester) said: While natural feeding of infants by the mother is desirable for the sake of dentition, still we must recognize that a large proportion of mothers are physically unable to provide the human milk, and they are driven to adopt some other form of nourishment. Mr. Owen mentioned that the sterilization of cow's milk destroys a living something which is essential to the well-being of an infant. What this substance or germ is we do not know; but if sterilized milk must be used, then some other organic ingredient should occasionally be given to the child, such as ripe orange juice; this may be administered midway between meals, so that the acid may not coagulate the milk too rapidly in the stomach. The first factor present in the production of dental decay in young children is often the septic surface around the point of eruption of a milk tooth. A surface over an erupting temporary tooth should always be cleaned with an alkaline preparation such as hydrate of magnesia. While the task of treating the teeth of school children is almost insurmountable, we have a more favourable field in preventing decay in younger children by attention to healthy feeding and cleansing. Children may be given fruit, such as apples, as soon as all the temporary teeth are erupted sufficiently for good antagonism; the acid in such fruit is cleansing to the enamel, and does not have a solvent action on it.

Mr. G. A. PEAKE (Cheltenham) was entirely in agreement with the methods of treatment outlined by Mr. Turner and Mr. Colyer, and he was of the opinion that most dental surgeons also shared these opinions. One

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instance of a family who appeared remarkably prone to dental caries had for a long time puzzled him. The teeth were freely decaying and the saliva was always viscid and slimy. Only one of the family did not show the tendency to caries, and he was for the most part engaged away from home at school and coaching. Eventually it appeared that the entire family, were in the habit of eating biscuits instead of bread at practically all their meals, with the one exception of the boy. Evidently the biscuits were responsible for the carious condition of the individuals' mouths.

Mr. J. M. ACKLAND (President) said the slides they had seen in connexion with this discussion were most excellent, and had served in an especial manner to demonstrate the ravages caused by hypoplasia and decay in children's teeth. He quite agreed that all teeth that could not be rendered thoroughly aseptic and stopped, and so made fit for use, should be extracted; but he was not able to follow those who advocated wholesale extraction of sound as well as unsound temporary teeth, when they run the risk of a mouth not being itself aseptic. He considered that to leave a child —say of 4 or 5—edentulous must be to lessen that child's chances in many ways; and further from the want of use, the gums would be less likely to develop and so raise many difficulties when the permanent teeth came to be erupted. This question of the deterioration of the teeth was a very serious one, and would have to be faced sooner or later. There was little doubt that many cases of gastritis were due to diseased teeth and faulty mastication. The object of the dental surgeon should be to see not only that the teeth themselves were sound, but that the mouth itself was kept in a clean and proper condition. There was little doubt that as civilization had increased teeth had deteriorated, and one result of the use of highly prepared flour instead of the old-fashioned wholemeal, stone ground stuff was seen in defective teeth. Again, the mouth could not be kept aseptic unless they had nasal breathing. With regard to the feeding of infants, no artificial food could ever take the place of the natural, and here in a great measure lay the root of the evil. He was surprised to hear so little said about the feeding of the mother during the state of pregnancy and whilst suckling the child.

REPLY.

In the absence of Dr. G. F. Still and Mr. Edmund Owen,

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the other openers of the discussion, the President called upon Mr. J. G. Turner to reply to the discussion. Mr. J. G. Turner said that the discussion appeared to have raised two main questions: the food of the children, and the method of treatment of carious deciduous teeth and the inflammation of the mouth arising therefrom. Regarding treatment, he still adhered to the axiom stated in his paper, that whenever a temporary tooth could not be rendered painless and aseptic, such a tooth should be extracted. Mr. J. F. Colyer had also suggested that a tooth that had ceased to function should be removed, especially when there was a possibility of its causing lodgment of food and imperilling a permanent tooth. With this he was in entire agreement, as a functionless tooth at once became a dirty tooth. At times, however, such a tooth might bite against the gums, and so to some extent function, then it might not be a dirty tooth. There was no difficulty in feeding a child, even when all the temporary teeth had disappeared and only the first molars remained; such a child was in infinitely a better position than a child with even three or four roots of temporary teeth. Experience justified the treatment advocated, and the subsequent development of the child was improved by measures at first sight, perhaps, appearing drastic; but, as Mr. Colyer said, it was a question of cleanliness *v.* appearance, or even some slight ultimate alteration of the permanent teeth, and the question of cleanliness far outshadowed any other consideration. He had maintained that the development of the teeth *was* associated with the maternal feeding from the date of conception. It was also, no doubt, a fact that sterilized milk without any fresh diet could produce a condition favourable to hypoplasia. Mr. Gibbs mentioned Professor Schafer's experiments, and it was strange that though the animals were very ill, their teeth were not effected, but it was often the case with animals suffering from rickets the bones were altered, but the teeth did not suffer. The other line along which the discussion had developed—the relation of diseases of the stomach to carious teeth—showed that there was a suspicion, perhaps more in the minds of many physicians, that derangements of the stomach caused dental caries; but how was this obtained? Was it due to eructation of acid? If so, the quantity eructated must be very large—large enough, in fact, to produce profound pathological changes in the pharynx, as mild acids, such as existed in lemonade, etc., acted as de-

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terrents to bacterial growth, and so dental caries. Was it due to alterations in phagocytosis? If so, the neck of the tooth only would be affected, and caries of the crowns of teeth was the most common position for decay. Was the salivary secretion altered or the salivary glands affected? If so, in what manner, in what degree, and how did such hypothetical alterations affect dental caries? The onus of proof of such general statements rested with those who made them, especially with our knowledge of the process and pathology of dental caries. Finally, he was inclined to regard the anæmia described by Mr. Baker as secondary to the mouth affection.—*British Medical Journal.*

## THE TEETH OF HOSPITAL PATIENTS.

A DISCUSSION has been taking place in the *British Journal of Nursing* on the care of the teeth of hospital patients. It began by a letter by a "Paying Pro." asking why this important point was not better attended to and was followed by a letter from a "Practical Person" deprecating the suggestion and saying that the Nurses' time was too occupied and too valuable to be wasted on such trifles.

This was too much for various correspondents some of whose letters are subjoined:—

"I think a "Paying Pro." deserves thanks for drawing attention to the question of surface nursing in our training-school wards. It is by no means as carefully done as might be. The health depends greatly on clean teeth and in sickness the mouth requires constant care, so that more attention might be given to these details. Of course the morning rush of work is the real reason why nurses have seldom the time to give sufficient care to the person of patients, although of late years things have much improved. Teeth are not cleaned systematically in this hospital." S. C. M.

"At the request of our dental surgeon tooth-brushes have, within the last year, been added to the list of necessaries patients bring with them to the hospital, and I must say I feel not a little ashamed that I did not myself think of such a very needful article long before this. We supply the patients with enamelled beakers to use, not tumblers, which would be liable to be constantly broken. On the whole the

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patients, especially the women, are glad to avail themselves of the opportunity of cleaning their mouth and teeth. When you come to think of it it really was the height of absurdity that we should have spent an enormous amount of time and trouble in keeping the mouth of a typhoid or paralysed patient clean, and yet have denied you the utensils for the most ordinary cleanliness to those patients who were able themselves to use them. Considering the deplorable condition of the teeth of the average Englishman or woman, and the amount of illness that is directly traceable to dirty mouths and decayed teeth, it is extraordinary that hospitals should have been so long in waking to the fact that the very ordinary and simple rule of cleaning one's teeth ought to be enforced upon the patients within their walls. If every improvement that gave trouble were to be tabooed the advance of hospitals in any direction would be a sheer impossibility."

M. MOLLETT, Matron.

Royal South Hants and Southampton Hospital.

"A Practical Worker" ridicules 'Paying Pro's' suggestion that hospital patients should be encouraged to clean their teeth. I should like to say to 'Practical Worker' that I should more often trust the probationer fresh from home to notice want of refinements in nursing details and want of consideration for the patient's comforts than the nurse who has become hardened by custom to things which, perhaps, in her own early days struck her with surprise.

She proceeds to say that "the truth is the majority of patients have no teeth to clean. Do not we advocate tooth brushes in order that there may be some teeth left to clean. If instead of holding a fellow nurse up to the ridicule of her patients, 'Practical Worker' had taken the opportunity to speak to them on the advantages of cleaning the teeth she would really have been doing a useful and practical bit of work. The Queen's Nurses, who are always preaching in our districts the necessity for the care of the mouth, regret that in so many Hospitals this most important and necessary detail is omitted."

QUEEN'S NURSE.

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*To the Editor of the "British Journal of Nursing."*

"DEAR MADAM,—When a "Practical Worker" has learnt a little more physiology and knowledge of the digestive tract, she may be able to speak with more authority.

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If teeth were cleaned daily, should we see so many toothless mouths, so many anæmic looking girls and young men, and so many cases of indigestion?

As for her remark *re* hospital patients never having cleaned their teeth, it is absurd; some have never been in a clean bed, and have never washed their feet, and should we on this account put them in dirty beds, and never cleanse them? Surely the same applies to teeth, and if we nurses taught our patients to habitually clean their teeth, should we not be doing a good work?

As for the suggestion being absurd on account of the trouble, in an important matter of this kind, trouble should not be considered any more than it is in the case of any other nursing attention.

In my hospital, a large London one, the importance of teeth cleaning was just being recognised, and in many wards the patients cleaned their teeth as an ordinary routine thing, a mug being given to them for that purpose, when a basin of water was given them for washing themselves. The tooth brushes were kept with the patients' washing things.

In the case of the patients who are too ill to wash themselves, their mouths are cleaned as an ordinary routine thing.

As for the cost, where a patient could really not afford a tooth brush, surely one might be provided out of some fund. The Samaritan fund could perhaps be used for this purpose, as, unless people have good teeth and clean mouths, the nourishment provided does them little good.

In the case of the patients who put their teeth away for the night, are *they* never cleaned? C. S.

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## A NEW AND ACCURATE METHOD OF MAKING GOLD INLAYS.

By W. H. Taggart, D.D.S., Chicago, Ill.

Read before the New York Odontological Society, at its anniversary meeting, January 15th, 1907.

### The Gold Inlay Hitherto.

It never occurred to me that I would be the one to devise those radical changes which I knew must come in order to make any decided progress; for you will have to admit that our chief improvement in the line of gold inlay work in

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the last ten years has come more from our increased dexterity due largely to our experience, than from any novelty of methods.

Of course, individually we have improved, and our gold inlay of to-day is much more sightly and mechanically more correct than it was five years ago; we have changed one method for another, and by a gradual growth the making of the present gold inlay was evolved; but the same foundation was being builded upon: a matrix, either gold or platinum, was burnished to the cavity, or to a cast of the cavity, and this was filled with solder or gold scraps; or a swaged articulating surface soldered to this matrix. All this has been the practice, and with very gratifying results; but we have reached the limit of improvement by these methods and something radical must come or we will cease to improve the gold inlay.

One method I have the pleasure of showing you to-night; if by chance in my enthusiasm I should say too much, and thus spoil my concentration, or if I should say the same thing too often, remember I am imbued with the same idea that runs through that old religious song, "I love to tell the story, because I know 'tis true."

Before I present to you my special method for gold inlay work, I wish to make a few remarks on some of the underlying principles which pertain to all kinds of inlays, gold or porcelain.

### Underlying Principles in Inlay Work.

There is no doubt in my mind that the inlay principle for filling teeth has come to stay; chiefly because it is a better tooth-saver. I have never advocated any method in dentistry solely because it was easier, but if it be better and incidentally is easier, I am heartily in favour of it, and this seems to be the position the inlay principle takes in my practice. When I say it is a better tooth-saver, I know I am treading on the sacred ground of some who believe, first, last, and always, in the gold foil filling, and who point to a number of records of fifty years of good service for foil fillings; but in their eagerness to stand by an old friend they fail to state the thousands of just as perfect fillings as the fifty-year-old ones, that have not lasted three years, not because they were not mechanically correct, but because of the low-grade tooth-structure on which the filling was built. No two substances such as gold and tooth-material can come

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in actual contact, consequently there is always a chance for capillary attraction to take place ; but in the case of the long-lived filling it makes no difference about capillary attraction because the tooth-structure is good ; in the short-lived gold filling, however, the structure is faulty, and along with this is a bad environment, and then capillary attraction takes place and bad results follow. In case an inlay is put in a tooth of faulty structure the capillary condition does not exist, consequently the mechanical cause for leakage is no longer present, and the tooth-structure, in spite of its environment, resists decay. I have had inlays come out, and have also seen some mighty poor ones, but I have never yet seen an inlay fail from recurrent decay.

An inlay is an honest filling ; it is either in the tooth, and saving it from decay, or, it is in the appendix.

I will have nothing to say on *cavity preparation* except this : If a cavity be a suitable one for a gold inlay, no steel tool should be used in its preparation ; corborundum stones of suitable sizes and shapes are far preferable. The inlay is put into cavities with bevelled margins, and no steel tool can compare with a carborundum in forming these margins. I say suitable carborundum wheels should be used, but they are not on the market, so I pass around for inspection wheels mounted and shaped for this purpose, and also I pass a file such as I use to shape these points, filing them to shape while revolving in the handpiece. As this inlay process can be made practically painless by use of these stones, why use a steel tool ? The difference in comfort to the patient between the two is as great as between a pneumatic tyre and an old-fashioned farm waggon wheel.

A year or so ago Dr. Poundstone, of North-Western University Dental School, read a paper on cements, and by a series of elaborate experiments showed that the cement took up all of the space occupied by the 1-1000 inch platinum used as a matrix, and consequently there was no use in having a matrix thinner than this gauge, as the cement had to occupy the 1-1000 of an inch anyway, whether the matrix was thinner or not. I knew some of my inlays stood away from the margins considerably more than this, and some of them a great deal less, so I immediately combated his idea, and have since incorporated my own explanation in all of my inlay work. It is this :

The grains of cement pile up on top of each other the

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same as so much sand does ; now, when direct pressure comes on these grains, those which can get out of the way do so, but the others remain one on top of the other, and the harder the pressure the less apt they are to assume a new position.

Take, for example, the method of the moulders in a foundry. They throw up an irregular pile of sand, and on top of this they put a moulding-board ; do they then put direct pressure on this to embed it? No. They could put their whole weight on it, and it would embed but a little ; but they give it a rubbing movement, so as to push one grain of sand off from another, and in this way they get it to seat itself.

Take the bricklayer. Does he put the mortar down, and the brick on top, and put his weight by direct pressure on it? No, he taps it from side to side and end to end, in order to have the grains of sand roll off each other.

Now, apply this principle to inlay setting. Many are in the habit, as soon as the inlay is approximately to place, of putting direct pressure with an instrument or with a wooden wedge, and by so doing placing the cement grains in a condition where they cannot roll one away from the other, but are on top of each other, and will not allow the inlay to be seated, which to my mind is the cause for an excessive cement line between the inlay and the cavity in what would otherwise be a close-fitting inlay. Now, in the gold inlay I would avoid this by using a mallet and a hard-wood stick, and go forward and back across the corners, and down the centre and back again, and keep this up for quite a few seconds.

In the case of a smaller approximal porcelain inlay, I would press the inlay approximately to its seat, and then take a piece of linen tape, about a foot long and wider than the inlay, and draw its full length against the inlay ; this absolutely wipes all the excess cement away and seats it as well as direct pressure can do. Now for our principle :

At this stage take a very narrow tape, viz.. one-sixteenth of an inch wide, and use this as you would a polishing strip, going from end to end of the inlay, as you would in polishing a gold inlay ; anyone who has not tried this or a similar method will be surprised at the excess cement which squeezes out, because the grains of cement have been allowed to roll away from one another.

The dissolving of the cement line I have never found to



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be a serious element in the life of the inlay, as the depth to which it dissolves is only equal to the width of the line, consequently it does not leave exposed any vulnerable point, and no leakage can take place under the inlay, as capillary attraction as a force has ceased. But in a good foil filling this same amount of defective margin would be fatal to the life of the filling.

### The New Method.

What I now present to you as my process for making gold inlays under the title "A New and Accurate Method of Making Gold Inlays" should have had a more comprehensive name. The title should have included bridge work and gold plate work, for I believe it will be the coming method for making partial gold plates and bridges as well as inlays. The title also should have included some information in regard to the time consumed, for this is one of its greatest points. By this process I can make gold inlays of the most complicated character in from thirty to forty minutes, inlays which have always taken me from three to four hours to make, in fact there is not an inlay which I show you to-night that has taken more than thirty-five minutes to make. This, of course, does not include the cavity preparation, or cementing to place, which is the same with this inlay as with any other; the thirty-five minutes is the time actually consumed in manufacturing the inlay.

The process is as follows: After the cavity is prepared, a piece of special wax which has been filtered several times through fine filter paper, in order to remove every trace of foreign matter, is warmed and then pressed well into the wet cavity with the fingers, and the patient is allowed to bite into this in any and all directions, as in mastication. This gives an imprint of the opposing cusps in the wax. The wax is now raised out of the cavity just enough to unseat it, and show that it is not sticking to the cavity. At this stage the wax is chilled slightly with ordinary hydrant water, and the excess wax is trimmed away. Always during this shaping process be sure to keep the wax at an easily workable temperature.

In other words, make a wax inlay the exact shape you wish the finished gold one to be. Any artistic effects put on the wax at this stage will save time in the end, because wax is more easily carved than gold, and by carving with instruments lubricated with perfumed vaseline one can soon

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become expert in making wax inlays. If the cavity is so situated as not to have an adjoining tooth to help hold the wax in place while carving, the whole mass of wax can be chilled and carefully lifted from the cavity, and then, keeping it thoroughly chilled under the hydrant water, it can be carved, can be carried back to the cavity any number of times, thus being carved out of the mouth, and the final adapting of the margins is quite easy.

We now have a perfect wax inlay made of a material which has no foreign matter in it. Into this wax inlay [illustrating] a sprue wire is set by warming it sufficiently to melt it to the wax. The wax inlay with its sprue attached is now fastened to the lid of the flask, which is also a crucible mould. The inlay is then wholly embedded in an investing material, and when this has hardened the lid is removed from the flask, and the sprue wire comes with it, which now leaves a crucible with a hole leading to the wax inlay. The flask is put over a flame, and slowly heated up, and the wax is absorbed into the investing material, and leaves a mould the exact shape of the wax inlay. You see there is no separating of the flask to get the pattern out, as is always done in any other kind of moulding.

The flask is now put into the moulding machine, which has a nitrous oxide blow-pipe flame for melting the gold, and a compressed-air attachment for forcing the liquid gold into the mould, under the pressure of from 25 to 40 lb. to the square inch. The nitrous oxide flame is almost a necessity, as it is only by this flame that the gold can be made liquid enough to cast and cool without shrinking.

When the nitrous oxide flame has heated the gold much beyond its melting-point, the lever is quickly brought down, the flame is automatically switched away, and the compressed air is automatically thrown in on top of the liquid gold, which, of course, must go into the mould under heavy pressure. Sometimes cracks have developed in the investing material, and the gold was forced into these minute crevices in sheets as thin as tissue paper, showing how liquid the gold may become.

The actual time consumed in forcing the melted metal into the air-tight mould under this heavy pressure is probably but a fraction of a second, but the success of the whole process depends on this speed.

I have kept pace with all former moulding processes, and

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find that by the time the metal is melted and poured into the mould by gravity, it has become chilled enough to be thick, and not in a thin liquid form necessary for fine casting. My process, as I will show you, takes advantage of every fraction of a second of favourable conditions, and by having this heavy pressure on top, with no possible chance for gold or air to escape, the liquid gold is forced in ; and by liquid gold I mean gold in a boiling state—a great number of degrees beyond its actual melting-point. While it is in this freshly moulded condition the pressure is maintained for a few moments, in order to allow the molten gold to thoroughly congeal ; either this continued pressure prevents the gold from contracting, or the amount of expansion in the hot mould is equal to it ; at any rate, the filling fits.

Some have suggested that being composed of the purer and high-grade metals there is less expansion and contraction than with low-grade metals, which I think is true in a measure, but there must be some other reason, for we all know that the co-efficient of expansion and contraction is different in each metal, and yet metals—gold, silver, copper, brass—all fit the cavity perfectly. My theory is this : The molten molecules of metal are forcibly thrown into the mould and held there, and consequently are not allowed to rearrange themselves, as they would do if not under pressure.

This being a purely descriptive paper, it has taken but a few moments to describe the process, and as my ability as a teacher, if I have any, does not consist in writing text, if you will permit me I will repeat, in my own language and by the use of my hands, this description, so that, as I hope, you can all grasp it. [At this stage Dr. Taggart gave a minute and detailed demonstration of the whole process, carving, flasking, heating, and casting.]

And now, gentlemen, in conclusion, I will say that this is no careless man's process ; but I do say that I can take the most ordinary workman in this audience, and if he be a man who will obey instructions to the letter and not allow his own ideas to creep in from the start, I can show him in a half-hour how to make gold inlays better in every way than the most skilled workman can do by any other process to date ; and if allowed to instruct the already skilled man, he will make such an inlay as he never dreamed could be made. Gentlemen, I thank you.—*Cosmos.*

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# WHERE AND WHY A MATRIX SHOULD BE USED.

By Laurence S. Marks, L.D.S., D.D.S.

Broadly speaking, a matrix is indicated in those cases where the contour of a tooth has to be built up with either gold or a plastic filling. In gold fillings, controversy has raged round the possibility of condensing the gold thoroughly against these steel bands. Each worker, however, adapts his instruments to his own capabilities and peculiarities, and perfect results have been obtained by the advocates of both methods in these cavities where a matrix has been considered of advantage, *i.e.*, compound approximo-occlusal cavities in bicuspids and molars.

In my opinion, however, the matrix should be used whenever practical, for both gold and amalgam. Latterly, a new matrix machine has appeared for use on the incisor teeth (Crenshaw No. 6 contour) but its usefulness is not as apparent as its ingenuity.

In the use of cement, a very admirable matrix has also latterly been put on the market. These are in the form of narrow, celluloid strips, and explain their own purpose. The other plastic material is amalgam, and it is principally in this connection that I wish to refer to the matrix, as to when it should be used. Whenever what is technically termed a "contour" filling is required, then a matrix is not only indicated, but becomes a necessity, if the best results are to be obtained from this fickle filling material.

When using gold in a mesio-occlusal cavity, a matrix may interfere with the accessibility to the cavity, and may impede a good vision of the field of operation, and thus become an impossible adjunct.

But with amalgam all other considerations must be put on one side and the matrix adjusted. Now, as to why this little machine is so necessary to obtain the best results from amalgam as filling materials. A cavity of this description has lost either the greater part of one wall, or it may have one wall, or even more missing. If the cavity is a contour one, the amalgam must be mixed with such a quantity of mercury as to prevent it setting before the contouring and cavity is completed. This gives a substance of a somewhat stiffer consistence than putty, which it is manifestly im-

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possible to thoroughly condense; whilst it is also self-evident that the more pressure that is used the denser and harder will the resulting filling be, and the smaller the quantity of excess mercury remaining in the filling. In the same way as plaster in flowing will imprison air in its substance so does amalgam in a lesser degree, and unless the pressure is sufficient to cave in those blow-holes you will have a substance which is not solid, and which will, I believe, expand considerably, and have poor edge-strength.

With this soft material, the more pressure exerted behind it, the more the tendency to bulge out of this two or three-sided box. Again, if the amalgam be mixed to a stiffer consistence, the more difficult does it become, unless the matrix is used to condense the latter, an addition which, under the necessary pressure, will fill up the interproximal space, and crowd up against the neighbouring tooth in a flat mass. The numerous cases of recurrent decay around these fillings, I feel sure is due more to their deficiency in density than in the faulty preparation of the cavities or their margins. The fact that the majority of amalgam fillings which I have examined in incisor teeth show marked signs of recurrent decay seems to me proof that the want of density is the cause of the failure. Now look at the advantage of having a complete enclosure into which the filling is to be packed. Small quantities of the amalgam can be plugged in with as much pressure behind as you can exert, and the filling gradually grows to its full proportions, with a maximum of density in all parts, and with the advantage that the surplus mercury is expressed to the surface of the filling, and can be worked off at intervals. This filling will undoubtedly withstand the stress of mastication much better than one where the contour has been plastered on with a flat blade amalgam instrument.

The importance of the matrix is, however, increased by the latest methods of cavity preparation, because it has become necessary in nearly every case where a bicuspid or molar presents an approximal cavity. A writer in the *Cosmos* (October, 1906, page 772), says: "It is considered by all the enlightened members of the profession that, when an approximal cavity occurs in a bicuspid or molar, leaving an approximating tooth, it is necessary to make an occlusal opening into the cavity, in order to properly prepare and fill it."

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The ancient method of leaving the occlusal opening V-shaped and relying on the lateral retention is nothing short of malpractice in the light of our present day knowledge. Again, all authorities agree, and the experience of every operator is sufficient to prove, that a successful contour filling in amalgam is a practical impossibility, where there are not four walls to pack into, and lacking which a matrix of some form is an absolute necessity.

The fact that this filling material requires a little care in manipulation makes it more necessary to carefully scrutinise every stage of the operation, and it behoves all of us to do our best to remove the poor reputation which amalgam has as a tooth-preserver.

I have found a matrix a great help when extirpating a pulp under pressure anæsthesia, as it confines the rubber to the cavity, and concentrates the pressure where it is required. Through the courtesy of Mr. Naylor, I have here some of the various makes of matrixes, and you will see their method of application on these models here.—*Australian Journal of Dentistry.*

# Dental News.

## GLOUCESTER BOARD OF GUARDIANS.

At a recent meeting Mr. J. D. Birchall moved: "That arrangements be made with Mr. F. N. Fox, dentist, to attend to the teeth of the children at £10 10s. for one year, to include four inspections at the homes." He said the Children's Committee submitted this as an experiment rather than as an arrangement to go on from year to year. For some time the Committee had felt that they were not doing their duty to the health of the children so far as their teeth were concerned. The medical opinion of the country conclusively showed that the health of young people was greatly affected by the condition of their teeth. The more healthy the Guardians brought up children who were in their care the less likely would they be to come back upon the rates when they were older. They had sixty youngsters in the Homes, and many of them had defective teeth. The

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Committee asked several dentists their terms for undertaking the work and received replies from three—two asked £25 a year, and the third £10 10s. As the latter came from as good a firm as any, they determined to recommend its acceptance. Some might object that the Guardians did not have all the children's teeth attended to, but surely that was a very "hollow" objection—laughter, and a Guardian, "It wants "stopping." If followed to its logical conclusion they might say that because two or three Guardians neglected their children the Board would do the same. They could not level down. What they ought to strive for was to do their utmost to bring up the lads and girls healthy and able to earn a good living; to bring them up so that they would become decent and useful members of society. They must not be pampered and indulged in luxuries; but in fairness to the ratepayers they should be brought up healthy specimens. He hoped the recommendation would be adopted for one year. If at the end of that time the result was found to be unsatisfactory and the dentist unnecessary, he would be the first to recommend that it should be dropped.

Mr. J. B. Karn seconded, and supported the proposer in his contention that if some Guardians neglected their children it did not justify the Board in neglecting those who were committed to their charge. In the public and private schools parents of boarders were compelled to have the teeth of their children seen to, and from his own experience he saw the necessity and the advantage of this course for his own children, and would like others to have it. He rather wished Mr. Birchall could have gone further than he had done, and proposed that the Guardians should have their teeth seen to. If their teeth were in good order their digestion was in good order; their tempers were good, and they were able to speak better. Therefore, he rather wished the Guardians might have been included if this could have been done for another ten guineas.

Rev. W. J. Porter strongly opposed the proposition, and as a reply to a suggestion that children were handicapped in consequence of having bad teeth, remarked that many had been handicapped by reason of having incurved toe nails—numbers of men were sent home from South Africa because of that trouble—and if they appointed a dentist they might as well appoint a chiropodist. He thought they were going too far in these matters. These were the children of the

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very poor, and the suggestion was that they should be treated better than the children of others—better than their own children. His teeth were not examined by a dentist when he was a boy, but he was taught to look after them with a tooth brush ; and his opinion was that they should teach children self-help, and not simply provide everything for them. It was true that the Guardians were in the position of parents to these children, but they ought to treat them as children of poor people would be treated by respectable parents.

Mr. D. J. Elliott also opposed the recommendation. Half the people in the city were unable to have their teeth attended to—he was not alluding to Guardians although he noticed some had teeth missing, but to the general public. It would be a serious matter to spend money in the way proposed, because, although only ten guineas, there would be sure to be an increase, and the money would have to be paid by some who had the greatest difficulty in procuring food. It would be all very well if all the ratepayers were in the same position as Mr. Birchall. He maintained that the children in the Homes were better cared for and looked better than 50 per cent. of the children outside.

Rev. L. A. Vallender complimented the Chairman of the Committee on the manner in which he had presented the recommendation. He failed to see that it was any argument to say that because some could not afford it for themselves they should omit having the teeth of the children in their charge seen to. It was important that the children's teeth should be attended to, and if the ten guineas were to include everything the charge could not be regarded as excessive.

Mr. R. J. Vallander complimented the Chairman of the Committee on the manner in which he had presented the recommendation. He was quite like a foster-father to these children, and the Guardians appreciated his efforts. But he thought the recommendation too "classy."

Rev. J. H. Seabrook thought they created pauperism when they allowed their sympathy to carry them away. If the recommendation was agreed to, some people who could not afford to have the teeth of their own children attended to would actually have to pay for the children of others. He suggested that if a child's tooth wanted to be drawn the foster-mother could draw it ; and that it would be well if the Chairman of the Committee would withdraw his proposition.

Mr. Deavin supported the recommendation.

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Col. Curtis Hayward thought it a question of principle, not of amount. It would, of course, be an excellent thing to have the children's teeth regularly attended to; but there were a good many other excellent things. The great point to consider was, would it be right? Personally, he did not think it would. They ought not to teach the people that the happiest thing for themselves or their children was to become paupers. An old doctrine laid it down that they should not place paupers in a better position than the poorest of those who were contributing to and independent of the poor-rate. They would certainly be placing paupers in a better position than the poorest if they adopted the recommendation.

The Rev. C. E. Dighton did not think it at all necessary to do as proposed. They had an excellent medical officer who did all that was necessary, and would draw a tooth when he thought it right. The less people went to the dentists the better. He was never in a dentist's chair in his life.

The recommendation was rejected by a large majority.

## SCHOOL DENTISTRY.

### Suggestions for the London County Council.

On the subject of the care of the teeth, the report of the Education Branch of the Public Health Department of the London County Council says that "the secondary schools and training colleges show dental conditions among their pupils which, considering their age and status, are no better than the conditions of neglect found in the elementary schools. It is obvious that dental caries is the most widespread affection among the population, and, as a result, the working capacity, and even earnings, of large numbers of the population is seriously affected. Dental hygiene must be taught in school, but the Continental experience shows that examination and teaching are useless unless followed by the practical measures of inculcating and enforcing cleanliness among the children, and providing remedial treatment. Most of these children will be neglected if left to private enterprise. The affection is so insidious and so widespread that it should be met by public provision. There is no way of dealing with money in the interests of public health which will return so enormous a gain to the population for

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the small expense required as this matter of school dentistry. Dentists never touch this class of child, and there is here no competition between the private practitioner and the public servant. At present there is not hospital accommodation in London for more than about 200 cases weekly—say, 10,000 annually—but at least ten times this accommodation would be required to relieve even a part of the children whom school dentists would select as requiring it. Probably dentistry would be best practised as part of the work of the school clinics which are suggested. The operations would be of the simplest nature, consisting of extractions or fillings."

## THE DEVON AND EXETER DENTAL HOSPITAL.

THE quarterly Court of the Board of Management of the Devon and Exeter Dental Hospital took place on the 13th ult. A letter was read from Mr. J. T. Browne-Mason, intimating that as he had left the city he was reluctantly obliged to send in his resignation, and thus sever a connection of something over 27 years with that Institution. Whilst accepting this with deep regret, at the proposition of Mr. Henry B. Mason, seconded by Dr. Mortimer, and feelingly supported by Dr. Bayne, the Board recognising his past most valuable services for so lengthened a period, being as he was, practically the actual founder of that Hospital, unanimously resolved to convey to Mr. Browne-Mason their sincere regret and sympathy, expressing at the same time their earnest hope that in the future his somewhat shattered health might greatly improve by the change of residence. It was also proposed by Dr. Ackland, that as some tangible proof of the esteem in which he was universally held by them all, Mr. Brown-Mason should be elected the hon. consulting dental surgeon to the Institution. A small sub-committee was elected with a view to secure the honorary services of another professional gentleman to fill the vacancy now made.

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# Legal.

## A REGISTRAR'S STRICTURES.

### An Extraordinary Case.

There was a complete exposure of the methods adopted by some artificial teeth manufacturers during the hearing of a remarkable case which came before Mr. Registrar Withers in his chambers, at Blackburn County Court, on Friday, January 10th.

The plaintiff was a well-spoken young man, named Wm. Henry Gregg, of Archibald Street, Mill Hill, Blackburn, who was described as an artificial teeth manufacturer, and he sued J. Pratley, of Moorgate Street, Mill Hill, for £2 2s., balance for an upper set of teeth supplied to his wife. £1 having been paid when the order was given. Mr. H. Backhouse was for plaintiff, and Mr. J. Campbell defendant.

Mr. Campbell raised the point in the opening that although a claim was lodged for £2 3s. no statement had been furnished "for the work done and materials supplied" as stated in the claim. He based his defence on the ground that the teeth were not a reasonable fit.

The Registrar asked what about the extractions?

Mr. Backhouse: "We do not claim for extraction at all. We merely claim for work done."

Mr. Campbell asked for the Registrar's ruling as to whether they were entitled to the full details. It was a moot point whether plaintiff should not name price of teeth to note whether the charge for extraction was made under a disguised charge.

The Registrar: "That is not possible under the Dentists' Act. The contract was a certain price for the work."

In opening Mr. Backhouse narrated circumstances of the contract.

Mr. Gregg, the plaintiff, said he received the order for the teeth towards the end of September the price being £3 3s. The Registrar intervened with the remark, "Was it a canvass?" To which plaintiff replied, "No, not exactly. I was a customer at her chipped-potato shop, and in casual conversation I learnt that she desired a set."

The Registrar: "Is that the way you conduct your business—by canvassing? I do not say whether it is right or wrong, but is that your method?"

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Plaintiff: "Yes, I solicit orders." Plaintiff continued his evidence, stating that he arranged with Mr. Lancaster, also an artificial manufacturer of Montague Street, Blackburn, to extract the teeth. A stump or two were left in the gums, but when it was suggested to the lady that these should be extracted she commenced "to kick" and objected most forcibly. She agreed, however, to have a set at the agreed price of £3 3s., and £1 was paid as a guarantee charge. No charge was made for the extraction.

The Registrar also intervened and said it would be ridiculous to make a set without extracting or attending to the stumps in some way.

Plaintiff: "But she declined to have them out."

Plaintiff added that an impression was taken with the stumps in, and when the teeth were made they articulated perfectly. He advised defendant to leave the teeth in the mouth for two or three days, but in the evening she returned and declared that "their Bill said she looked as though she had fallen off a hay-stack." On examination later he found the gums very much swollen, the stumps being more embedded than previously. He explained that she had been filing the stumps with an instrument which was somewhat rusty and inflammation had set in.

The Registrar: "Why did you advise the lady to keep the teeth in her mouth for three days"?

Plaintiff: "It is the custom in the trade. It is until the vulcanite sets in the mouth."

The Registrar (sharply): "How do you know that? You are not qualified?"

Plaintiff: "You get it from dentists' text books."

Later, said plaintiff, defendant asked for a "sucker" to be placed in the roof, but they evidently were not satisfactory to her and she refused further negotiations.

Cross-examined: Plaintiff said he had been an artificial teeth manufacturer not very long—about six months—but he had been an impression taker for twelve years. Prior to taking up the work he was a chemist and druggist.

The Registrar: "Were you a member of the Pharmaceutical Society?"

Plaintiff: "Yes, of Ireland."

In further explanation plaintiff said Mr. Lancaster had not been paid. That was an arrangement between them. Pressed for the details, the Registrar remarking that they

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did not work for nothing in these go ahead days, plaintiff mentioned that Mr. Lancaster, also a manufacturer of teeth, had taught him the dental art ; and it was agreed that he should solicit work, and that, for the beginning, he should assist him with extractions and the making of teeth. He was compelled to give up the chemical profession owing to illness and he had done nothing in particular since. True, he is an insurance agent, but it was only for a fortnight and he had then to sue for his wages. He was present when the case was made at Mr. Lancaster's premises—The Registrar : " Hence an apprentice hand helped to make them."

Plaintiff was giving a minute description of the process of tooth making when the Registrar remarked : " Don't give away any of the wonderful secrets of artificial teeth making, you have no need to."

Plaintiff : " I am afraid there are no secrets about it."

Mr. Campbell : " I should think not by the number of them springing up."

Plaintiff denied telling Mrs. Batley that the stumps would have to be filed although he might have said that if she would keep them in and suck toffee they would stick.

Questioned with regard to the sucker plaintiff said he knew nothing about Lord's patent and he was not aware that the sucker was wrongly fixed. In answer to the Registrar Mr. Gregg said the lady would not allow him to extract, apparently having no confidence with him or she did not like his looks.

Mr. Lancaster, with 12 years' experience, gave evidence in support of the claim. Under cross-examination he admitted that the sucker was wrongly fixed inasmuch as there were not two vents. He did not consider it material, however, whether the sucker was fixed on the hard or the soft portion of the mouth. When pressed particularly by the Registrar as to whether the teeth had been scraped witness said : " It looks as if they might have been." He admitted teaching plaintiff dentistry and asked by the Registrar he said a dentist's work and that of an artificial teeth manufacturer were similar, leading the Registrar to observe :— " So that the teeth manufacturer is doing the work of the dentist " ?

Witness : " Exactly."

And dentists have to be registered and you have not. I thought as much.

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Mr. Lancaster replied that there were many on the register who had no more qualification for being there than he had.

The Registrar: "I am well aware of the old Act. But that does not justify this man (Lancaster) in breeding artificial teeth manufacturers.

For the defence Mr. Campbell said that was one of those cases which demonstrated the evil of unqualified men practicing. He had not filed a counter-claim for the return of the £1 deposit for his client did not wish it. He denied that the teeth were ever a fit. Mrs. Batley bore out his statements and said that plaintiff declared that the stumps would have to be filed either by himself or herself, and she preferred to do it. She knew that the plaintiff was not a qualified man but his wife had "puffed" him so in the district that she decided to give him a trial.

Mr. Bennett (L.L.D.), of Edinburgh College, was of the opinion that the impression was a defective one. The "sucker" was a misfit also. The teeth could never be made to fit. They would have to be re-made altogether.

The Registrar: "Is it usual to leave stumps in?"

Witness: "Not of this character."

Further questioned by the Registrar Mr. Bennett said £3 3s. was a reasonable price, but the defendant got no better advantage from plaintiff than she would have got from any dentist.

The Registrar, without calling on Dr. Fenton, said he was not one who would say that nobody was entitled to earn their livelihood at this work, but the public were very much to blame in not resorting to properly qualified men when there was anything wrong with their mouths or teeth. Possibly the public thought it cheaper to go to an unqualified rather than to a qualified dentist. Personally he had not been under that impression and Mr. Bennett had supported his views. He had no hesitation in saying that both Mr. Lancaster and plaintiff were following the calling of dentists and were not registered—it was a mere blind to call themselves artificial teeth manufacturers. Plaintiff was not one and could not make teeth, yet he came into court and practically demanded a verdict. He would not get one and he (the Registrar) hoped that the public would note his observations for he felt very strong on the matter. He gave a verdict with the full costs of his witnesses.

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Mr. Campbell asked for extra costs, but the Registrar observed: "The case may be of public interest but plaintiff must not suffer for that."

The teeth were handed over to the plaintiff in view of the fact that defendant had not lodged a counter-claim for the £1 deposit.

# Correspondence.

*To the Editor, "British Journal of Dental Science."*

THE DENTISTS' ACT OF 1878.

SIR.—The advantages or privileges of persons registered under this are as follows:—

(1st.)—A person registered under this Act is entitled or licensed to take or use the name or title of dentist and is specially qualified *to practice* dentistry. (*See* Clause 3).

(2nd.) A person registered under this Act shall be entitled to practice dentistry and dental surgery in any part of His Majesty's dominions and shall be entitled to recover his fee or charge in any court for the performance of any dental operation or dental attendance or advice. (*See* Clause 5.)

(3rd.) Every person registered under this Act shall be exempt from serving on all juries and inquests, &c., and from serving in the Militia, &c. (*See* Clause 30.)

It is plainly to be seen that persons who are *not* registered under this Act have no such privileges in fact have no rights in dentistry and no legal standing whatever, L,D.S. or otherwise.—LEX.

# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

No notice taken of Anonymous Communications. Name and address must always be given, although not necessarily for publication.

We cannot undertake to return communications unless the necessary postage stamps are forwarded.

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# ORTHODONTIA AND THE ERUPTION OF THE TEETH.

By T. E. Constant, M.R.C.S., L.D.S.Eng.

The subject of Orthodontia having obtained special prominence quite suddenly in this country, it seems opportune to re-state a physiological axiom first enunciated more than ten years ago.

**The blood-pressure exercised in the soft tissue which intervenes between a developing (human) tooth and its socket is the active mechanical factor in its eruption.**

That this is an axiom has been questioned by some of the more prominent English writers upon the subject of dental physiology. If it were otherwise, of course, it would be needless to insist further upon the point; but as the authorities to whom the student naturally turns for guidance either proclaim themselves still in ignorance of the mechanical factor in the eruption of the human teeth, or else seem to be quite at sea as to the method and limits of its application, it is only fair that the present generation of students should have an opportunity of judging for itself.

This is the more important since our professors have discovered "Orthodontia," for an intelligent conception of



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that subject is impossible without a rational hypothesis of the mechanics of the normal eruption of the teeth. I am convinced that this is so from my own initial difficulties with the subject.

It may, perhaps, interest the unprejudiced reader to learn the considerations which induced me to undertake the enquiry, and the steps which lead to the elucidation of the mechanical factor in the eruption of the teeth, for it forcibly illustrates the important bearing of anatomy and physiology upon general practice.

Many years ago it happened that several cases of what used to be termed at that time "Anterior Protrusion" (but which is now generally known as Superior Protrusion) came under my notice within a few days of each other. They were all typical cases, and none of them were due to what may be termed extra-oral causes, such as thumb-sucking.

Most of them were hereditary in the sense that the parents on one side or other had suffered from the deformity, and in more than one instance dental surgeons had refused to undertake remedial measures on that account, and had assured the parents that the deformity, if corrected, would reappear. Three of the cases were of sisters of different ages, and comparison at once rendered obvious the progressive nature of the deformity. It was some long time, however, before I was enabled, by careful and continuous observation of the younger sisters, to arrive at the conclusion, elsewhere recorded, that the deformity was due to imperfect development of the mandible.

To conduct the investigation a step further, a knowledge of the mechanism of the normal eruption of the teeth, upon which the development of the jaws so largely depends, became imperative. This enquiry was rendered extremely difficult through lack of material, it being practically impossible to procure for dissection human specimens of the

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requisite age. The study of the many dry, and deplorably few wet, specimens in the various museums did no more than render obvious the inadequacy of the existing theories of the eruption of the teeth. Much light, however, was thrown upon the subject by dissection of some of the domestic animals and certain of the rodentia. After about a year's work I was convinced that, whatever the force might be which extruded the teeth, it could not be one applied to the extremities of the developing roots, for they were too plastic to admit of it without distortion.

This being so, I was misled for a long time by the assumption that the teeth must be carried to the surface by the growth of the crypt wall; but the fallacy of this was rendered evident one day by the consideration of a case of an unerupted tooth, the crypt wall of which must at one time have been common to it and its neighbours which, nevertheless, succeeded in reaching their destination.

Inspiration came one evening when dissecting a calf. Instead of exploring the erupting tooth from the buccal side, as was my usual custom, I cut down upon and exposed the occlusal surface, and was interested to find that the developing tooth was easily moveable *and could be pushed some distance further down into its crypt*, from which it was removed without difficulty. I then found myself looking down upon a column of vascular tissue, the dentine papilla, upon which the tooth had been supported. The problem was solved at a glance.

The flaccid gelantinous material left in the crypt must have been the means through which the tooth crown had been kept in contact with the superjacent tissues, which I had removed in order to expose it. The fact that the tooth crown when pushed down into the crypt had shown no tendency to return indicated that the extrusive force itself was absent, although the tissue through which it must have been exerted

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was still there. The obviously vascular character of this tissue left no doubt but that the *absent force was the blood-pressure.*

Having obtained the clue I made a special visit to Town to look round the museums to see how far it would apply in certain instances which had previously appeared inscrutable. The extrusion of the enormous tusk of the male elephant to which I had previously devoted hours of fruitless cogitation was a simple matter when the key to the problem had been obtained. The consideration that there is between the tusk and its socket what is, in principle, a hydrostatic pad solved another problem. It previously had seemed remarkable that the herculean tasks that a young male elephant, in a state of nature, can perform with its tusk should not result in injury to the developing extremity of that organ—the part which in a human tooth we should term the apex, but which in the case of the elephant is the base. The developing edge of the extremity of the tusk is comparatively thin and soft, and until it is clearly understood how completely it is protected by the vascular pad in which it is embedded it is difficult to realise how it is able to resist without injury the shocks that must from time to time be transmitted to it.

Then, again, in examining the incisor teeth of rodentia, the vascular tension in the column of tissue represented by their persistent pulps together with that in the dental periosteum, is obviously quite sufficient to account for the extrusion of the teeth that compensates the continual attrition of their cutting edges. How rapid that extrusion can be, anybody who will remove an incisor tooth of a young rabbit, and keep the animal under observation, can determine for himself.

Human teeth in the active stage of eruption before the constriction of their apical extremities are, as regards their eruptive tendency, similar to teeth growing from persistent

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pulps. When constriction of the apex of a tooth occurs the extrusive tendency is correspondingly diminished but not altogether annulled, the blood pressure in the dental periosteum being alone sufficient to extrude a tooth, the eruption of which has been delayed beyond the normal period.

Having thus briefly sketched the reason for undertaking the investigation of the subject of the eruption of the teeth, and the method employed, let us review the stages in the eruption of a permanent first molar, for that is the tooth to which the orthodontist who has grasped the first principles of the science will give particular attention. We find it first of all in its crypt, covered in by a thin roof of membrame similar in naked-eye appearance to that which closes the fontanelles of an infant. This structure I have termed the *ossific membrane*. When the enamel organ has completed its task, and not till then, eruption of the tooth commences. Absorption of the superjacent tissues occurs as the crown is elevated, probably as a result of the pressure. Synchronously with the elevation of the tooth crown the formation of the root proceeds, the newly formed edge of the root being comparatively soft. After the tooth has penetrated the gum elevation of the crown takes place until it comes into contact with its natural opponent, and even then extrusion does not cease but continues *pari passu* with the change that takes place in the ascending ramus of the mandible, another point worthy of the attention of the orthodontist. It is obvious that the changes which take place during the formation of the root must tend to diminish the extrusive power of the blood pressure in the dental papilla. At first there is a broad column of vascular tissue upon which the crown rests. This is subsequently divided into two in the case of a lower and into three in the case of an upper molar, with corresponding diminution of extrusive influence. Then the constriction of the apices of the fully formed roots is another step in the

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same direction, and finally the change that takes place with age in the tissue of the dental periosteum imposes the final limit upon the extrusive force, which, however, as before stated never in normal cases, altogether disappears.

## FOLK LORE.

By Geo. Simmonds.

In the West of Scotland it is believed that, if the tongue is put into the cavity, another tooth will not grow in its place.

In Rutlandshire, it is believed, that if a baby's first tooth be cut in the upper jaw, the child will not live.

To be born with teeth is unfortunate, and is alluded to by Shakespeare, among the evil omens attending the birth of Gloster.

Among the lower orders, and negroes, and also among young children of respectable parents in New Brunswick; it is very commonly held, that when a tooth is drawn, if you refrain from thrusting the tongue in the cavity, the second tooth will be golden.

When children in South Sweden cast their teeth, the said teeth are thrown into the fire, as a species of offering; and it is the custom in Scotland, when early teeth are shed, to place them on salt, and throw them on the fire.

To dream about teeth, is held to be a warning that sorrow of some kind is at hand; and it is even unluckier still to dream of teeth falling out.

To have teeth wide apart is a sign of prosperity; and is said to indicate one's future happiness in life.

The people of Ceylon worship the tooth of the elephant, those of Malabar the tooth of a monkey.

In Bacon's "*Works*" we read that the human teeth are not *bred*, but both the first and the second sets are born with us in little bags, or nests, from which they grow into maturity.

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"Sweet love is food for Fortune's tooth."
*Shakespeare.*

"The elephant is never won with anger.
Nor must that man who would reclaim a lion
Take him by the teeth."
*Valentinian*" Act 2 Sc 1.

In the "*Old Prayer Books*" of the time of King Edward the Sixth, were the "*Homilies*" and it was ordered that when a preacher had no sermon prepared, that he was to read anyone of those to the Congregation : an Index of these *Homilies*, is in our present Prayer Books.

In that against "*Peril of Idolatry*" it is said : "All diseases have their special Saints as gods, the curers of them : the toothache St. Appoline : see the *Oxford Edition* 1859 : where is the following foot note :

"*Appoline* was the usual name in England : and *Apolline* is in France for *Apollonia* : a martyr at Alexandria, who among other tortures had all *her teeth beaten out.*"

"S. Appolin, the rotten teeth doth keep
When sore they ache."

This Saint is believed to have great sympathy with those who suffer faom toothache : part of her martyrdom consisted in submitting to barbarous tooth extraction at the hands of her tormentors, and it may be supposed that "fellow feeling makes her wondrous kind."

Artists represent her—*tooth in hand*—and sometimes add a pair of pincers, to her attributes.

"When fever burns, or ague freezes :
Rheumatics gnaw or colic squeezes,
Our neighbour's sympathy may ease us
Wi' pitying moan .
But thee, thou hell o' a' diseases
Aye mocks our groans !"

---

In "*Don Quixote*," *1842 Edition*, is the Note :

"The Orison of Santa Apolonia was one of the *ensalmos* or magic skills to cure sickness, very popular in Cervantes' time."

A Spanish writer, Don Francisco Patricio Berquizas, has gathered the words of this *Orison* from the mouths of some old women at Esquirvias.

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It is in short verse like a *sequidilla*, and the following is a literal translation of it:

Apollonia was at the gate of Heaven; and the Virgin Mary passed that way.

"Say Apollonia, what are you about? Are you asleep, or watching?

"My lady, I neither sleep nor watch. I am dying with a pain in my teeth."

"By the Star of Venus and the setting Sun, by the Most Holy Sacrament which I bore in my womb; may no pain in your teeth, neither front or back ever affect you from this time henceforward."

At the Church at Bonn, on the Rhine, her tooth is exhibited on St. Apollonia day, and devoutly kissed by very many persons of both sexes and all ages, as a preservative against toothache.

The relic in a glass case is held by the Priest, who wipes the glass after each salutation.

### St. Blaise

was martyred under Licinius, and whose memory is honoured in the little town of St. Blazey in Cornwall.

*Black's Guide* to that county says:

"Candles were offered upon his Altar, which was afterwards esteemed an infallible cure for the toothache and diseased cattle.

The third of February is consecrated to St. Blaise in the Church of England Calendar, and it is duly kept as a holiday in St. Blazey.

In the Church there is a statue of the patron saint; but not the less are toothaches and sore throats common enough in the town, which does so much honour to him."

In Sir Thomas More's *Works*, 1557, is this passage:

"I have heard one taught for ye toothache, to goe thryse about a Churchyarde, and never thynke on a fox tayle."

In Louis J. Jennings' "*Rambles Among the Hills*" is this choice bit:

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"The Village and Church of Ditchling lie below—a village in which a Jew pedler, once upon a time, murdered an Innkeeper, his wife and their servant, and was for these crimes hanged upon a scaffold hard by.

A piece of the gibbet, as the local histories bear witness-was long considered a certain cure for toothache.

It was within the recollection of the Vicar (1874) of the Parish of Churcham, Gloucestershire, after public Baptism; for the then monthly nurse invariably to wash out the mouth of the recently regenerated infant with the remaining sanctified water.

She assured the Vicar it was a safeguard against toothache.

John Wesley, "When his own tooth ached, he prayed, and the pain left him.—*Southey.*

In the National Museum of the Society of Antiquaries of Scotland are to be seen many curious charms against toothache, &c., amongst them a flat oblong stone, *No. 182*, which is 4 inches long by 2¾ inches wide, and less than a quarter inch in thickness, notched on the sides, and pierced with two holes one and a-half inch apart, formerly used as a charm for the cure of diseases in Islay, Argyllshire.

Another *No. 193* is not transcribed at length in the catalogue, but the following account of it is printed on a label attached to the glass case in which it is preserved:

"A MS charm to cure the toothache, written and sold by a professional witch, named Kate McAulay, residing at Kishom, Lochcarron, Rothshire, in 1855."

It is written on a scrap of paper 8 inches long, and 2½ in breadth, as follows:

"Petter was laying his head upon a marrable ston, weping and Christ came by and said, what else thou Petter. Peter answered and said "Lord god my tooth." "Raise thou Petter and be healed, and whosoever shall carry these lines in my name shall never feel the toothick." Kett McAulay."

This paper which was folded small, was worn, for at least a year in a small silk bag, hung round the neck of a shepherd, who had given half-a-crown to the witch for the charm,

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which however was to lose its efficacy when looked at."

In 1862, at Crewkerne, in Somerset, a similar receipt was used, it ran thus:

"Peter sat on a marble stone
When by here Jesus came alone.
Peter what is it makes you for to quake
Lord Jesus it is the toothache.
Rise Peter and be healed."

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The wonderful property of Magnets to cure the toothache.

November 19th, 1765.

"I observed some time since, that Mr. Von Aken, an Apothecary of Orebo, in Sweden, had made trial on thirty people for curing the toothache with the artificial load stone: eighteen of these he perfectly cured by one single application of the magnetical bar, holding it on the tooth for three minutes only; nine wanted a second application of it before they were relieved; and three of them only found a momentary ease from their pains.

"On drawing the teeth of these three, a quantity of corrupt matter was found under them, which probably hindered the effect of the magnet.

"The relation of so easy and simple a method of relieving people in a pain which is so extremely troublesome struck me, and gave me pleasure. I tried it, therefore, on several subjects, and found it not to fail in one instance, though the pain had lasted a considerable time in some, and the teeth rotten; it is true, in one the pain was not removed till after it had, by repeated applications, brought on a plentiful salivation, which quickly carried it off.

The only direction I gave for the application of it was to put the north pole to the tooth, and to hold the bar, as much as could be, in a perpendicular direction to it, for about three, four, or five minutes, taking care to keep it on the tooth for some time after the pain was removed.

This very easy method of getting relief I cannot but recommend to everyone; and therefore I have sent you this, though I know some will not try it, because it is so easy,

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These artificial magnets may be bought in the shops in London at sevenpence or eightpence each, in a black paper case ; they are generally six inches long, and have the inches marked on them."

H. Boesnier de la Touche.

Little Chelsea. November, 19th, 1765.

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Letters from Gottingen, of the 6th April, 1765, most positively insist that Dr. Klarich, belonging to the University there, had actually cured upwards of fifty-four persons of the toothache by the application of a load stone.

*Annual Register, 1765.*

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In 1709, John Watts, advertised in an almanac of that year, that he was a tooth operator; and applied himself wholly to that business, and that he lived in Racket Court, Fleet Street.

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"An aching tooth is better out than in,
To loose a rotten member is a gain."

*Baxter.*

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*From "Songs and Verses on Sporting Subjects."*
*By* R. E. EGERTON-WARBURTON, *1879.*

In the North Isles of Scotland we find old people with strong teeth free from decay though possibly worn down like those of an old horse.

These old people, when children, gathered sea-weed for kelp in all weathers ; their lunch or dinner a bannock, with a drink of milk ; oatmeal cake or oatmeal for breakfast and dinner, with home brewed ale, as a frequent beverage.

They did not eat till they were hnngry—then their teeth and jaws had plenty of exercise, and they could eat without drinking, that was the secret of those good old strong teeth, and their owners would say :—

"I never heard much of toothache when I was young."

"*Nature*," 1894.

"One said a tooth drawer was a kind of unconscionable trade, be-

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cause his trade was nothing else but to take away those things whereby every man gets his living." *Hazlitt.*

## MY DENTIST.

In childhood, who my first array
Of teeth pluck'd tenderly away.
For teeth, like dogs, have each their day?
My Dentist.

Who, when my first had run their race
And others had usurp'd their place
Were overcrowded gave them space?
My Dentist.

Whether thecavities were slight
Or vast and deep, who stopp'd them tight
Then made their polish'd surface white?
My Dentist.

When void of bone, a gap was seen
Who fix'd the vacancy to screen
An artificial one between?
My Dentist.

Who, when ambitious to be first
My horse fell headlong in the burst
Replaced the ivories dispersed?
My Dentist.

Who "*Baily*" left on parlour chair
With leaf turn'd down to shew me where
Jack Russell's life was pictured there?
My Dentist.

Or reading in that doleful cell
Whyte-Melville's verse, who knew full well
It's charms, would every pang dispel?
My Dentist.

Who lull'd with laughing gas my fear
When conscious that a tug was near
For man's endurance too severe?
My Dentist.

And lastly, when infirm I grew
Who skilfully each relic drew
And framed for me a mouth piece new?
My Dentist.

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British Journal of Dental Science

LONDON, FEBRUARY 15, 1908.

## WHO PAYS FOR PROFESSIONAL DIGNITY?

THIS question is the text for an article in a new American periodical called the *Weekly Advertiser*, which paper is so convinced of both the duty and necessity of dentists advertising themselves—not only for their own benefit but for the good of their fellow-men—that it has organised a Prize Competition amongst dentists, the reward to be given to that genius who writes the best essay on why dentists should advertise.

Naturally a periodical, whose *raison d'etre* is advertisement, would feel grieved that so many good men and true should carry on their practices without having resort to its advertising columns, especially when such a course would seem to lead to affluence and an assured position. Why, it asks, should all the advertising be done by the quacks and charlatans who thereby gaina bad name for advertisers? The way to elevate the advertiser is for the first-rate men to join the ranks and let the public know they *are* first-rate. And there is nothing selfish in this; dentists have their families to keep, their debts to pay, and, in addition, they can have that inward glow of satisfaction which accompanies every good deed by reflecting that they are enlightening the laity by making known to them where good dentistry can be found. "Let dentists, therefore, reveal themselves by advertising" says the *Advertiser*. "The dignity that ordains otherwise is

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not worth its cost in idle hours to the dentist, and in pain and anguish to the sufferer who needs, but knows not of him." Beautiful!

It is somewhat akin to thrashing a dead horse to once more repeat arguments against advertising. But, as in our experience, there has never yet been such a blatant invitation to the weak-kneed as that which appears in the *Weekly Advertiser* it may not be waste of time to reply to one or two of its plausible arguments. Suppose, for instance, we all accepted the *Advertiser's* invitation, threw over our ethical code and advertised one against the other. Apart from other considerations should we be a penny better off and would the much-pitied public be any wiser as to who were the best men? The only ones who would profit would be the proprietors of the *Advertiser* and similar organs. Advertising may be profitable for a few in a large way of business, but if it became at all universal, it must defeat its own object. It is a costly and unsatisfactory method of obtaining "customers," and the tendency to exaggeration in the advertisement makes the man who cannot perform all he promises a liar and a humbug.

We may rest assured that the ethical code has been founded on a spirit of justice and brotherhood, and anything which promotes a spirit of boasting and grabbing sooner or later defeats its own ends. The public are not altogether stupid, and they are beginning to understand that it is not what a man says of himself but what other people say of him that matters. It is by this that we stand or fall and we are being daily weighed in the balances of public opinion as to whether our work is good and our manners courteous or the reverse.

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A TRAVELLER'S OPINION.—A traveller in many lands writes as follows to the *Chronicle*: "Of all the people I have come in contact with, the Irish alone have worse teeth than the English. In the great majority of working-class homes, and particularly among servant girls, the care of the teeth, the function of teeth, and their vital importance to

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health, are not merely unknown, but unguessed at. And throughout all classes in England one encounters in all sorts of strange irregularities, protrusions, fangs, and tusks, gaps and cavities, the evidences of a total lack of forethought and proper tending, the effects of which on the national health are simply appalling. In the interval of waiting to reform everything by the ballot-box, the women of England might very well devote a part of their time to improving their children's feet and teeth."

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DENTISTS REGULAR AND IRREGULAR.—"L.D.S." writes to the *Standard*: "I wish most vigorously to protest against the indiscriminate use by the Press of the word 'dentist.' It is a great injustice that a body of highly educated and qualified professional men should be thus confounded in the public mind with persons who possess no recognised qualifications. No man is, in the eye of the law, a "dentist," in this country at least, unless his name appears upon the Dentists' Register, and it is a crying shame that those who have spent much time and money in obtaining degrees in dental surgery from the licensing bodies should be bracketed with those who possess no qualifications. There are, unfortunately, thousands of persons in this country who profess to perform all those operations which come under the heading of dental surgery. The general public have so little education upon this subject that they submit themselves to these people for treatment, under the impression, in a large number of cases, that they are being attended to by "dentists." It is an injustice that dentists as a body should be confounded with those who have no professional responsibility to the public."

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A PERTINENT QUERY.—"A Civil Servant" writes as follows to the *Liverpool Courier*:—"As one of the public who wants to receive the best skill in return for his fees, I should be much obliged if anyone would tell me how I am to know the skilled dentist from the unskilled, and what steps, if any, are taken by the duly qualified men to protect me

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from imposture by these existing quacks?" This is replied to by "Warden," who says:—"In the first place, the position is defined by the Dental Act, 1878, in Clause III., of which that "From and after the 1st day of August, 1879, a person shall not be entitled to take or use the name or title of 'dentist' (either alone or in combination with any other word or words); or 'dental practitioner,' or any name, title, addition, or description implying that he is registered under this Act, or that he is a person specially qualified to practise dentistry, unless he is registered under this Act," &c. At the time of the passing of this Act all those who were then in practice were, on application, admitted to the Register, and now only those who take a prescribed course of study, and become qualified, are entitled to be so registered. The *Dental Register* (which also contains a copy of the Act) is published each year by the General Medical Council, and contains all the names of those who are allowed to use the title "Dentist" in the United Kingdom, and may be consulted, I believe, in any of the public libraries."

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A New Name for Toothache.—At Llanrwst Education Council a letter was read from Mr. Roberts, head-master of the Llandoget school, complaining of the absence from school of two children who had doctor's certificate exempting their presence, but who at the same time were allowed to work, sawing and fetching wood for the fire. On a certain Friday, they were absent from school, producing a certificate, but on the Saturday he met them hauling coal from Llanrwst. The day was bitterly cold and wet. He said their ailment was "Odontalgia" according to the certificate, and that was nothing more than toothache.

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# Abstracts of British & Foreign Journals.

## THE STERILISING EFFECT OF SALIVA.

NOWADAYS in deference to public opinion we dentists are all sterilising our dental instruments, whereas formerly we simply gave them such cleansing as common decency properly demanded, and very properly, too. But now it is contended that dental instruments are dangerously infected by the secretions of the mouth, if not by what is popularly called "decay" in cavities which need filling.

If this theory is true, why are not people fatally poisoned by the use of teaspoons, forks, cups, and glasses out of which they drink? Why is not the food we eat from plates also poisoned by contact with plates and cups previously used by others and only washed supposedly, with soap and hot water, wiped on unsterilised dish towels, and handled by the unsterilised hands of the cooks and waitresses just before we use them? We all use these unsterilsed articles a hundred times, perhaps a thousand times, where a dental instrument enters the mouth once.

Why is not the ragamuffin dead in ten minutes after eating parts of a rotten apple or orange which he picked up from the street? Is it not because the fluids and mucous secretions of the mouth, as well as of the nostrils are far more efficient sterilisers than any man can invent—an instantaneous steriliser without being itself dangerous to us to touch or swallow, like the sterilisers we are now using in our practice?

### SALIVA DOES NOT DECOMPOSE.

We all know the inner cavities of the body cannot be opened to the air, even much less safely be operated upon with surgical instruments, or touched with unsterilised fingers, without great risk of death to the patient, and the success of modern surgery, therefore, is most marked. But I have practised dentistry for more than fifty years and I never knew or read of a patient being poisoned by ordinary dental operations, and I have personally known more than one dentist going from one patient to another without even washing his hands or giving any attention to cleaning his instruments. Of course such negligence is shocking and contemptible.



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In the winter and spring of 1900-1 I collected about a pint and a half of pure saliva by means of a drainage pipe used in filling operations, and saved it for an experiment, which consisted of exposure to the air during a hot summer, In September the fluid was perfectly limpid and absolutely free from odour or other evidence of decomposition. Is there any other portion of the human body, except perhaps the hair, nails, and bones, which could have stood the test, and does it not prove that those fluids are themselves wonderful sterilisers? Meanwhile those people who entrust the sterilisation of their eating utensils to their cooks and butlers need not fear that their dentists do not sterilise their instruments, for we all do it.—DENTAL SURGEON, Manchester, in *Science Siftings*.

## POOR-LAW CHILDREN AND DENTISTRY.

ALTHOUGH the Gloucester Guardians did not adopt a sound and useful resolution which was moved at their last meeting by Mr. J. D. Birchall, some amount of good must follow the discussion on it, and upon another occasion the result may be reversed greatly to the advantage of those principally concerned. Mr. Birchall proposed that arrangements should be made with a dentist to attend to the teeth of the children at a cost of ten guineas a year to include four inspections at the Homes. It is worthy of consideration that the suggestion was submitted by the Children's Committee of the Union as an experiment, and it was undoubtedly one that would be worth the making. The arguments raised against it rested almost entirely on the view that the experiment would provide Poor-Law children with something that is not enjoyed by many others in working-class homes. Colonel Curtis Hayward, we note, emphasised this especially. He admitted that it would be an excellent thing to have the teeth of the children attended to regularly, but—there were many other excellent things. The point to consider, he said, was—is it right? And he then raised the "old doctrine that they should not place paupers in a better position than the poorest of those who were contributing to and independent of the poor rate." This doctrine has, we think a good deal to answer for; but in any case how can it be made to apply to children? Children do not contribute towards the poor rate, and it is not disadvantageous to the

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community that they should be brought up in a sound state of health. From one or another cause, or from a whole series of causes, it has become increasingly apparent that the human teeth are now far less efficient than they were even a few generations only ago. It is also known that physical ability depends largely on proper mastication. Guardians may therefore be well advised in providing dentistry attendance for the children who come under their control. It is not for the State to say that she will, as a parent, reduce herself to the lowest possible level: it is, on the other hand, her duty to turn out, as far as she can, a human article fitted to deal actively and intelligently with the world. Colonel Curtis Hayward seemed to think the provisions of dentistry would lead children or parents to believe that a condition of pauperism was good. We do not see how he can be right, for it is obvious that the more completely both brain and body are built up the less disposition will there be towards pauperism. It is the effete and not the virile who become paupers. In these matters let us have a little more confidence in good, and not be afraid of over-stepping the mark. Healthy citizens are never a danger to the State.—*Poor Law Officer's Journal.*

## PYORRHŒA ALVEOLARIS.*

By T. A. Hardgrove, D.D.S., Fond Du Lac, Wis.

The subject assigned to me to present to you for discussion was that of pathology. But, after some reflection, I concluded that pathology was too vast a field to permit of opening up more than one of its phases for discussion, and as I believe pyorrhœa alveolaris to be the one phase needing discussion most of all, I will confine myself to that.

Under the head of etiology and pathology, I will attempt to enumerate some of the causes and conditions that seem to me to be responsible for this malady, and which are not receiving the amount of scientific research that the importance of this disease demands. Pyorrhœa, in the beginning, does not intend to be other than a harmless temporary disease, but through failure on the part of the patient to give heed to its

*Read before the Fox River Valley Dental Society.

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presence on account of absence of pain and a lack, too, upon the part of the dentist to make an early diagnosis and institute prophylactic measures to check its progress, it is further encouraged upon its excursion of peridental destruction and tooth exfoliation, until it is too late to save at least the teeth that have been extruded and cast off.

It is impossible to single out any one cause as the one to which to attribute pyorrhœa alveolaris, as it is, I believe, due to a combination of pathological conditions. This disease comes as a result of a dying peridental membrane, caused by a depraved peridental circulation, as the result of an injury received either from traumatic, chemical, bacterial or systemic causes, aided by local conditions, any and all of these giving rise to an inflammation by which we get an engorgement of the blood vessels, partly by the inflammation present and as the apparent result of loss of control of the nerve endings that have to do with the circulation at those locations. Having then reached an inflammatory stage where an epithelial exfoliation takes place acting as a nucleus and furnishing a roughened place for the formation of the so-called tartar, or more properly, a concretion. The exudate of blood plasma is now present, as it is attracted to locations where inflammation is at work. The deposit adds to itself from such salts as are then present, the relative hardness depending upon the amount of mineral salts entering into its composition.

The formation of deposit will take place in whichever way the peridental membrane will die first or in whichever direction the field is ready to receive it. Having now the mechanical irritative advantage of the deposit to aid the progress of the disease, the blood and plasma being present in larger quantities, a suitable media or pabulum is prepared, the pus organism steps in and infects the material that is present, dissolving the albuminous portions, leaving behind it the salts to crystallize and form the deposit, and, as the albuminous portion is dissolved and broken down in the form of pus, the salts that are not soluble take form and we get pus sinuses with pus flowing from them and we have true pyorrhœa alveolaris.

By traumatic causes, I mean, such as would come from an over-worked peridental membrane or an over-worked portion of the membrane due to an improper occlusion, or as the result of accident.

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Dr. C. S. Case of Chicago, I am told, has made the statement that he has cured pyorrhœa by the regulation of irregular teeth, and I believe he is justified in the assertion, as by the regulation of the teeth by his marvellous skill, he produces a normal occlusion giving to each tooth its proper amount of exercise. Let me illustrate. Take a certain number of horses and give them just enough exercise to keep them all in normal health. Now, if you were to allow one or two of them to remain idle in the stall, the horses standing idle would in time show signs of broken health, not so soon, however, perhaps as the horses overworked from doing extra work placed upon them because of the idleness of the horses left in the stall. And by chemical causes, I mean, such fermentations of food products as may in a protected location cause sufficient irritation to induce abnormal capillary circulation, thereby producing an inflammation. Bacterial causes consist in the introduction of the pus organism and such other bacteria as may produce an inflammation. They may be tubercular, diptheritic and the bacteria known as actinomycosis and syphilitic, if that be a bacterial disease.

Systemic causes are not so numerous as many of the profession would lead us to believe. I am not sure that there are very many systemic causes contributing to the origin of this disease aside from tubercular and syphilitic conditions. Were you to ask me if I did or did not believe that diabetes or Bright's disease is present with pyorrhea, I would answer that I thought they oftimes were. Were you to ask me if I thought them responsible for the disease, I would say they are not. I believe that many of the so-called systemic causes are but the result of the disease rather than the cause. I have many times known of sugar and albumen in the urine of people afflicted with pyorrhœa alveolaris to disappear entirely in some cases and a great many times lessened when the pyorrhœa has been relieved, and what is more reasonable than to suppose that pernicious anæmia, which is said to consist in a great destruction of red blood cells in the liver as the result of poisons taken up by the portal circulation from the intestinal tract, may be due to infectious bi-products emptied into the intestinal canal from the mouth cavity. So much importance is placed upon this idea of infection from the mouth, that few surgeons undertake intestinal surgery in this age without first insisting upon a thorough sterilization of the oral cavity, and it is said by many that

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one great cause of appendicitis may be attributed to infections coming to it from that source.

### Prognosis and Treatment.

Pyorrhœa alveolaris is both a preventible and curable disease. The length of time usually required to establish a cure is from three to four weeks after a tooth has been treated. So far as checking the disease is concerned, that part of the cure takes place immediately after the operative interference, the balance of the time being required by nature for granulation, regeneration and organisation. The treatment of this disease should be approached just as any minor surgical operation.

A careful examination should be made with a delicate instrument, called deposit finder, not so much for diagnosis, as to determine the extent of the disease. Having that carefully done, you will anæsthetize the field of operation with a one-half of one per cent. solution of cocaine released from a large-sized hypodermic syringe through a long blunt end, flexible needle, using rolls of cotton on each side of the alveolus to absorb the excess. With a carefully selected instrument, one that will pass beyond the deposit, remove it with a pull stroke, if possible; if not, with a push stroke. The deposit must be removed at any rate. With the deposit positively and carefully removed, the pus sinus should be flooded with a warm solution of lactic acid containing a slight amount of oil of sandal wood. This fluid has two purposes to perform ; The dissolving of small particles of concretion that we may not have been able to detect with the instrument and a cauterization of the walls of the cavity. The object in using lactic acid in preference to the other acids is that it cauterizes just enough to induce granulation and not enough to destroy the vitality of the surrounding tissue. Oil of sandal wood is placed in the solution for its effect upon the mucous membrane and as an aid in the solution of the small particles of concretion. The tooth or teeth operated upon should be ligated to the adjacent teeth to obtain as much rest as possible, and that part of the work left alone for three or four weeks. I do not believe it is wise to polish with pumice until three or four weeks have elapsed. By that time union will have taken place and there will be no danger of the pumice working down into the pus cavity between the gums and roots of the teeth acting as an insoluble irritant. Oft-

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times the pus cavity will have a small opening and a large or expanded termination. In these cases it is good practice to make an opening at the termination of the sac, allowing the irrigating fluid to pass through and for the purpose of drainage.

A massaging of the roots and gums should not be begun until five or six days following the operation. The object of waiting that length of time is not to interfere with the granulation that is taking place. The patient should be instructed with reference to oral hygiene and provided with antiseptic, stimulating aed astringent mouth washes and a tooth powder, if considered necessary, containing not too much of the gritty substance.

Following this procedure, and with the co-operation of patients of average intelligence, this branch of our work becomes a most attractive, gratifying and profitable field of service.—*Dental Review.*

## TAGGART METHOD OF MODEL MAKING.

A SPECIALLY refined wax is used for models that when liquified by heat will leave no residue. This, warmed to a condition of softness easily worked, is pressed, in sufficient bulk for the purpose, into the wet cavity, which of course has been prepared on the principle of inlay cavities generally, so that an impression will withdraw without dragging or distortion. This wax is then modelled, a bite taken, and model trimmed and finished with all the care and detail desired in the cast to be produced. The more exacting the care in artistic contour and smooth finish (to which the wax is very susceptible) the more finished and perfect will be the cast; and little has to be done in final finishing.

When all is complete up to this point, the wax should be hardened by applying cold water. Now, a short piece of smooth wire is slightly warmed and one end pressed into the most convenient bulky part of the inlay far enough to be firm when chilled, and serve as a handle by which to lift the wax from the cavity. It should be but partially lifted out at first, and then gently pressed back to place, and perhaps repeated before it is finally lifted out. Prior to the final lift, all margins should be closely inspected to make sure of no fault at any point. This unseating of the wax inlay and reseating may be done with an excavator and the wire, which

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later acts as a sprue former, is set in at any convenient point afterward. Any marks of the excavator are easily smoothed out so they do not show.

On its removal, the model, if not used at once, should be gently deposited in cold water to keep it chilled and safe until ready for the next step.

The next step is to secure the very finest grained investment material obtainable and mix to a rather thick creamy consistency. Now take the wax model by its wire handle, dislodge or absorb surplus water, and apply the investment with either a camel's hair brush or a little spatula as delicate as a toothpick, using every precaution to not disturb the finest feather edge of wax, nor to permit any bubbles.

The former is designed to support the wire and wax model and engage with the flask or ring to give shape to the investment. This former is disk-shape, with a cone-shaped prominence in the centre and a hole in the cone to accomodate the wire holding the model. The wire is set in this hole, and the ring or flask referred to is set on the former surrounding the model, so that the latter occupies the centre. Now a mix of the same investment, or any other that is good and will stand high heat without cracking, may be made and the flask filled up flush. This must be done with care to not displace that already investing the wax. When hard enough the brass former may be removed from the end by a twist, and a cup (the reverse of the cone) will be found in the investment, with the wire protruding from the centre. Warm the wire a little and remove that with a twist.

Now from the bottom of this cup a hole (sprue) runs to the wax model, and from it the melted wax may run when the flask is being dried out thoroughly and the heating that is to follow. What does not run out is burned or absorbed in the investment so that the mould is ready to receive the metal. It is now removed to the press and in the cup is placed the metal to be melted. A small high efficiency flame is turned on and the metal quickly melted until it boils. Then down comes the plunger, terminating in a cap that covers the flask, closing the cup air tight, and in the same movement the flame is cut off and compressed air or gas is let in at such pressure (25 or 30 pounds) that the metal is forced down through the sprue and into the daintiest recesses and traceries of the mould. The oxy-hydrogen flame is superior to the ordinary blowpipe, but involves a flask of

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nitrous-oxide gas under pressure to be fed to the flame of ordinary gas as required. This gas is used instead of compressed air by Dr. Taggart to force the metal into mould.

After the pressure on the cast is held until it is solid, perhaps a minute, the flask may be dropped into cold water, which softens the investment, and if all has been done properly a perfect copy of the model is found in the cast. While gold is generally used, the system permits of using most any metal that may be cast and properly used in the mouth, from Mellotte's metal up, the flask being heated up only to the requirements of the kind of metal used. For low fusing metal of course requiring a heat only sufficient to get rid of the wax.

There isn't much question now about the value of inlays, or their superiority over the average gold filling. As Dr. C. H. Wright, of Chicago says, quoting his words, "The gold inlay in itself is quite indestructible in the mouth, and absolutely unchangeable to the extreme margin. It has many times the strength of any other filling material. As a protection against recurrences of caries, I am satisfied it has no equal, as in eleven years' use I have not seen a single case of failure and have inserted gold inlays in a great number of cases of heroic nature."—R. B. TULLER, *American Dental Journal*, pages 604-608.

# Reports of Societies.

## SCHOOL DENTISTS' SOCIETY.

THE Annual Meeting of the School Dentist's Society was held at the National Dental Hospital, Great Portland Street, London, W., on Monday, December 9th, 1907, at 8 p.m., the President, Mr. Sidney Spokes, in the chair.

In addition there were present Messrs. J. C. Oliver, G. Thompson, N. Bennett, Vernon Kuowles, R. Cumine, C. E. Wallis, Edward Keen, S. F. Rose, W. T. Elliot, A. Maurice, Pollitt, Pearce, Ward, and William Fisk, hon. secretary.

The Minutes of the previous general meeting were read and unanimously approved.

Letters of regret from members unable to attend were read.

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The Report of the Treasurer, Mr. Vernon Knowles, was read, and after a few remarks unanimously approved. It showed a balance in hand of £4 4s. 3d., and also that the balance owing to Messrs. Johnston for publishing the charts for the Society had been considerably reduced.

The Secretary, Mr. William Fisk, then read a synopsis of his Report, this was also unanimously approved.

## Report of School Dentists' Society for the Year 1907.

The School Dentists' Society has done its best to impress the importance of School Dentistry upon the Education Authorities of this country during the nine years of its existence, and therefore cannot but be gratified by the passing of the Medical Inspection Clauses which came into force on January 1st, 1908.

The recent memorandum issued by the Education Department specifically mentions the subject of "decayed teeth" and "oral sepsis" as matters to be noted, and though from the dental point of view the directions on the subject contained in the memorandum are meagre and inadequate, we have reason to be thankful that at last the teeth of the children of the elementary school class of this country are recognised officially as requiring some amount of attention.

The importance of a thorough and detailed examination is a point which the medical advisers of the Education Department appear to have lost sight of. It is therefore evident if we are to have the full benefit of the Medical Inspection Clauses as regards the teeth it will be necessary for us to deal with the matter in a much more complete and scientific manner than at present is indicated in the memorandum.

In the early part of this year the School Dentists' Society spent much time on the preparation, with Mr. Norman Bennett, of a "Statement" for the information of the Royal Commission on Poor Law which is now sitting. It embodies the views of the members of the Society, who ask that the regulations issued by the Local Government Board to Boards of Guardians on the subject of appointing dentists be made compulsory, and suggesting in addition the advisability of equalising the rate of payment throughout the country. The Commission is still engaged in taking evidence, and we may have to wait some time before we receive its reply to our suggestions.

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The appointment of an unqualified and unregistered practitioner to an Industrial School in Cumberland led to a lengthy correspondence between the School Dentists' Society, the Home Office and Local Government Board, with the result that at last the points at issue were admitted by the Home Office and Local Government Board and the objections of the Society being sustained, the appointment was declared null and void.

In order to facilitate the teaching of dental hygiene in Elementary Schools, the Society has been occupied during many months with the production, for publication, of diagrams and reproductions designed as far as possible to be self-explanatory, and at the same time to assist the school teacher in imparting the elementary principles involved in the preservation of the teeth. These diagrams have now been published and can be obtained of Messrs. A. K. Johnston, of 7, Paternoster Square, E.C., and of Messrs. Ash, Sons & Co., of 9, Broad Street, Golden Square, W. The reviews in the press, following their publication, have been extremely satisfactory, and I am glad to say the financial responsibility undertaken by the Society in producing and publishing these charts has been materially reduced by the large number sold. We hope in the course of the coming year to make arrangements for their sale in the United States of America and other parts.

Last August the Second International Congress on "School Hygiene" was held in London. The School Dentists' Society sent delegates, and Mr. C. Edward Wallis, of King's College Hospital, who is a member of the Council, read a paper "On the condition of the teeth in a Representative London County Council School." This paper will be published in the Transactions of the Congress when they appear early in 1908, and may possibly be printed separately for the benefit of members of the Society.

During the year an extremely interesting lecture was given by Mr, Frank Harrison, one of our Vice-Presidents, dealing with the "Delivery of Popular Lectures on Dentistry." The lecture was illustrated with very beautiful lantern slides, and Mr. Harrison also exhibited some original diagrams, which were much admired. The object of the lecture and diagrams was to aid those people who were desirous of lecturing on dental hygiene, but who lacked the experience so necessary for a successful lecture.

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Mr. Lonnon also delivered an interesting lecture on "Traumatic Injury to the Incisors of Young Patients." This lecture was listened to with interest, and afterwards well discussed.

At the International Congress in Berlin, in September last, Mr. C. E. Wallis acted as our representative, though he reports to us that owing to the large amount of attention given to School Dentistry at the Congress in London, very little was done in Berlin in that direction.

Mr. Wallis, however, visited the school dental clinics of Strasburg, Mulhausen, and Darmstadt, in company with Dr. Kerr, of the London County Council; and on his return read a paper, illustrated with lantern slides, on what is being done in these places in the matter of School Dentistry. These cities he explained were of particular interest, as in each a different method of dealing with the question is in actual operation, the most satisfactory plan from the English point of view being, in his opinion, the one in which the dentist devotes part only of his time to School Dental Work as opposed to the plan in which the dentist devotes the whole of his time to School Dental Work.

Finally, the Society still continues its work of affording information to all interested in School Dentistry, and in that I think amply justifies its existence.

The Society elected for membership Mr. Charles Glassington, M.R.C.S., L.D.S., dental surgeon to the Duke of York's School, Chelsea, proposed by Mr. Edward Keen, seconded by Mr. W. T. Elliott.

The election of officers then took place as follows:—President, Mr. Sidney Spokes; Vice-Presidents, Messrs. Denison Pedley, Frank Harrison, Norman Bennett, and A. E. Baker. To fill the vacancy on the Council caused by the action of Rule 7, Mr. John Cordell Oliver was elected, treasurer, Mr. Vernon Knowles; secretary, Mr. William Fisk.

The PRESIDENT then called upon Mr. John Cordell Oliver to read his paper, "The State and School Children's Teeth;" Mr. Edward Keen's paper, entitled "Fifteen Years' Work Amongst Poor Law Children," and Mr. W. T. Elliot's paper entitled "The Education (Administrative Provisions) Act and Dentistry."

The reading of these papers created much interest, especially that by Mr. Elliot, which dealt with the new con-

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ditions arising out of the passing of a recent Act of Parliament, The Education (Administrative Provisions) Act, 1907.

Mr. OLIVER said :—

Mr. Elliot's views as to the practical solution of this difficult question of Elementary School Dentistry seem to be based on an individual rather than a national aspect of it. In my opinion to be successful it must be wholly a State matter in no way subject to the whim or fancy of parent or even his willingness, or unwillingness to pay his penny per week per child. So technical a subject as the preservation of the children's teeth, requiring as it does periodical and systematic treatment, must not be interfered with by irregular attendances from any cause. Moreover the fees suggested and the uncertainty of payment would be most unsatisfactory. Charity must have no place, not even in the form of modified fees that do not adequately remunerate. To be permanent a great beneficent scheme of universal application such as is sought to be established must be on a paying basis. I am convinced that a great national scheme might easily be established on simple and effective lines confining it to children of from 7 to 14 that would prove the cheapest investment that the nation as a community could make, but it is not to be expected that the Government who are not experts in Dentistry should undertake so large a scheme all at once. They would do well to confine it by way of experiment to a few big centres at first and note the results and use these as object lessons for the whole country. We, who have this thing at heart, need not rush things. We have a good case which will stand being proved thoroughly.

Time being limited, it was unanimously agreed that the discussion of the various papers should be postponed until a future meeting, and it was resolved that Mr. Elliot's paper be taken first, and that copies be sent to each member of the Society, so that they may come prepared to join in the discussion.

A cordial vote of thanks was accorded Messrs. Oliver, Keen, and Elliot for their interesting and instructive contributions to the Society.

The meeting then adjourned.

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# Dental News.

## THE WAYS OF THE UNQUALIFIED.

FRANCIS H. SARSON, of Wellington-road, Rhyl, appeared with gross liabilities amounting to £170. His assets were set down (net) at £10, and he showed a deficiency of £130. He attributed this state of things to bad trade and pressure of creditors. The Official Receiver stated that the debtor, who was forty years of age, was a dentist, but not qualified, and was manager of the "County Dental Association, Limited," which the debtor formed and floated in 1901, and which took over his assets and liabilities. He believed his assets at that time would have met his liabilities. He was appointed manager at a salary of £130 a year. The nominal capital of the company was £500 in 500 £1 shares, of which the bankrupt held 370, the rest of the shares being held by his wife, brother, son and signatories. The assets of the company were said to be represented by dental appliances and debts estimated at £10. These debts were not scheduled by the bankrupt, but he had entered £10 as being his interest in the company. On the other hand, all dental goods bought were charged to him personally, and the company had, it was said, no liabilities. The Registrar: What was the object of this company? Mr. Tobias explained that, as he was unqualified, the debtor could not practise without forming a company. The Debtor: There are thousands of dentists doing the same thing all over the country, in Manchester and elsewhere. The Registrar: They register, and then practise? That's rather curious. The Assistant Official Receiver: That does not apply to the legal fraternity. The examination was closed.

## MEDICAL SICKNESS AND ACCIDENT SOCIETY.

THE usual monthly meeting of the executive committee of the Medical Sickness and Accident Society was held at 6, Catherine-street, London, W.C., on Jan. 17th. There were present Dr. F. de Havilland Hall (in the chair), Mr. J. Brindley James, Dr. Walter Smith, Dr. M. G. Biggs, Dr. H. A. Sansom, Dr. J. W. Hunt, Dr. M. Greenwood, Mr. F. S.

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Edwards, Dr. St. Clair B. Shadwell, Dr. F. J. Allan, Mr. Edward Bartlett, Mr. J. F. Colyer, and Dr. J. B. Ball. The accounts presented showed that the sickness experience of the society during the month of December had been exceptionally good. The claims were rather less numerous than is usual at that period of the year, and as they were in nearly all cases of very short duration the amount disbursed as sick pay was well under the expectation. The business during the year 1907 has been very good, an unusually large number of new members have joined the society, and a substantial increase in the funds has been made. Prospectuses and all information may be obtained on applicatien to Mr. F. Addiscott, secretary, Medical Sickness and Accident Society, 33, Chancery-lane, London, W.C.

## TEETHING POWDER PERILS.

A striking denunciation of certain teething powders for children was delivered recently, by Dr. Waldo, the city coroner.

There were several proprietary teething powders, he said, which often contained mercury, chalk, and calomel, and did a lot of harm to the teeth when they came.

He was told, moreover, that if they were kept for some time they changed their character and became a virulent poison. Dr. Waldo added that some hospitals, he believed, warned mothers against using some of the powders.

"I entirely agree with Dr. Waldo in regard to certain teething powders," said a West of England physician to the *Daily Mirror*. "Many teething powders which are bought by unsuspecting mothers contain nothing but colouring matter and a percentage of some powerful drug.

### SOOTHING, BUT HARMFUL.

"I refer particularly to morphia, which, in small quantities, is contained in one or two proprietary teething powders, Naturally enough, the powder soothes and sends the baby to sleep. The mother is pleased, and when the child cries again, gives it another of these powders.

"What is the inevitable result? The baby gets to like the powders more and more, and when deprived of them is restless and fretful.

"Such a treatment naturally weakens the child, and is

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extremely detrimental to its growing up healthy and strong.

"I would make it a criminal offence, if I had the power, to put morphia into children's teething powders.

"An ideal teething powder is a mixture of sugar and calomel. Calomel, used in moderate quantities, is perfectly harmless, and does a baby good."

HOW BABIES ARE DRUGGED.

A City chemist supplied the following list of infants' powders and and their contents :—

Grey powder—Chalk and mercury.
Cooling powder—Soda carbonate and sugar.
Teething powder—Calomel and sugar.

"There are several proprietary teething powders, however, which contain morphia," he said. "A proprietary powder means that it is made by a firm wholesale, and not made specially by the chemist, or under a doctor's orders.

"These powders are largely bought by mothers because they always quiet the child. They little know that in reality they are drugging their infants.

"A vigorous protest should be made against the use of some of these proprietary teething powders. They are doing infinite harm to the children of this country."

## ROYAL COLLEGE OF SURGEONS.

A quarterly meeting of the Council of the Royal College of Surgeons of England was held at the College. Mr. Henry Morris, president, in the chair. Diplomas of the Licence in Dental Surgery were granted to Mr. Samuel Stephenson Parkinson, and Mr. Wilton Thew, of Charing Cross and Royal Dental Hospitals. The revised standing rules relating to the office of conservator of the museum were approved, and it was determined to proceed to the election of a conservator in the vacancy occasioned by the death of Professor Stewart at the next meeting of the Council. Mr. Henry Morris was appointed Hunterian Orator for the year 1909, and Mr. Thomas Bryant was re-elected the representative of the College upon the Council of the Queen Victoria's Jubilee Institute for Nurses. A committee was appointed to prepare a circular to the fellows and members upon the question as to whether women should be admitted to examination for the diplomas of the college.

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# Legal.

## INQUEST.

### Cocaine for Tooth Extraction.

Mr. Troutbeck opened an inquest at Westminster as to the death of Jane Farvish, aged 42, the wife of a tailor, of Church Street, Soho, who died in the shop of a Russian, named Isidore Zeifert, at Broad Street, Golden Square, after cocaine had been injected for the purpose of tooth extraction. Ziefert, who has been remanded on a charge of manslaughter, was present in Court, and was represented by Mr. Barrington Matthews.

Nathan Farvish, a Russian Jew, said his wife suffered severely from toothache, and he went with her and his daughter to Zeifert's shop. The witness's daughter told Zeifert her mother was very weak and had been suffering for a fortnight with headache, and that she wanted him to take out two teeth. She suggested that they should be extracted under gas. Zeifert replied, "By gas; there is no good in taking them out under gas, as after gas you can suffer for weeks. Then, again, I have not got any gas, but I have some stuff which I put in the gums, and you will not feel any pain when I take them out." Zeifert sent his daughter out of the room, and told the witness that he would have to hold his wife's head. He then put some stuff into her gums. Zeifert took out two teeth, and directly afterwards the witness's wife seemed to be in a fit and was unconscious. After she had remained for two minutes in the chair the witness and Zeifert carried her on to a couch. The witness asked the dentist to send for a doctor. He explained that she would be all right in ten minutes, and began giving her something to smell, at the same time trying to get her to take some water. He then squeezed her chest and body for about ten minutes or a quarter of an hour, but he did not move her arms about. Seeing that his wife did not come round, the witness asked him why he did not send for a doctor. He answered, "We have got to wait another 15 minutes, and she will be all right." They waited that time, Zeifert meanwhile continuing to rub her chest and body. Then the witness made a row, and the dentist said he



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would send for a doctor. A medical man arrived about half an hour later—threequarters of an hour from the time the teeth had been extracted. The witness did not know why the nearest doctor was not sent for, but he believed the one that came was a friend of Zeifert's. He resorted to artificial respiration, and gave injections, and the witness asked him how long it would be before his wife got up. He made no reply, and the witness heard Zeifert say on the quiet to the doctor, "Will it be manslaughter?" From what he knew now he thought his wife was dead before they placed her on the couch, as he saw no sign of life after that. Her hands were getting cold. He had never seen the dentist before.

By Mr. Barrington Matthews: He told Zeifert that the teeth were to be taken out without pain, and it was with his permission that he gave her what he did. He did not know that she was suffering from heart disease, and he was sure she was not.

Annie Farvish, the daughter, said her mother had suffered from headache for a fortnight. It was a woman who told her about Zeifert. They arrived at his shop at 3.25 p.m., and her mother was very weak, but not at all excited or frightened. When the witness asked Zeifert whether he thought her mother was in a fit state to have her teeth out Zeifert laughed at her, and said, "Of course she is." The witness asked him his price for extracting teeth, and his answer was, "1s. the usual price, but 2s. 6d. for using this stuff, which is very expensive." She believed he mentioned the word "cocaine," but she had never heard the name before. She again asked him if her mother was fit to have them out, and he said she would be all right in a minute or two. The witness then left the room. Subsequently the witness thought she heard Zeifert tell the assistant that her mother was dead. When she found out that her mother was dead and asked Zeifert why he had not told her before, he he replied, "I did not want to break your heart. I wish I had poison; I would poison myself."

By Mr. Barrington Matthews: She did not know whether her mother suffered from heart disease.

Police-constable Page, 429 C, said that at 5 p.m. on Saturday he saw a large crowd of people outside Zeifert's shop. He found Zeifert and Mr. Eder in the shop, the latter saying, "All right, constable, I am a doctor; she is dead. I am going to report it to the coroner."

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Police-sergeant Timms, 19 C, said that he was called to the chemist's shop.

The CORONER: Why do you call it a chemist's shop?—It is for the sale of drugs.

What is the evidence that it is for the sale of drugs?—Drugs are exposed for sale, and the usual articles sold by chemists, such as patent medicines, &c.

The CORONER: I am asking that because I am informed that Zeifert is not a registered chemist or druggist.

Mr. Matthews: I believe that is so—at any rate, in this country, Sir.

The CORONER said that, of course, chemists sold many things for which registration was not required.

The witness added that the words "Soho Drug Stores" were on the facia. He went on to say that in a small room at the back of the shop he saw the dead woman lying on a couch. Zeifert said that he injected a little cocaine and took two stumps of teeth out, whereupon she became convulsed and fainted, and he sent for Mr. Eder, of Charlotte Street. Mr. Eder was present in the room, and told the witness that life was extinct when he arrived.

The CORONER examined a bottle produced, and said it bore in printed characters the words "Poison. Soho Drug Stores, 54, Broad Street, Soho, W.," and in handwriting "Cocaine Hydroch."

Mr. Matthews said there was no dispute as to all that.

Sub-divisional-Inspector Anderson said he arrived at the shop at 6 p.m. Zeifert said to him, "I gave her cocaine; I have done it hundreds of times," and in consequence of something Mr. Eder said Zeifert added, "I have no qualifications in this country." The hypodermic syringe and the bottle of cocaine were handed to the witness by Dr. Dunn, Zeifert remarking, "That's the syringe I used to inject the cocaine, and that is the cocaine." The witness took Zeifert to the police station, where, after further inquiries, he was charged. He made no reply.

Mr. Montague David Eder, physician and surgeon, of Fitzroy Street and Charlotte Street, Fitzroy Square, deposed to being called by a boy at about 4.15, who told him that there was a woman lying dangerously ill at 54, Broad Street, and asked him to go at once. It was about five minutes' walk.

The CORONER said the distance ought to be measured, be-

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cause one of the points of the case would be why was not the nearest doctor called in a case of such emergency.

Mr. Eder said that he found Zeifert at the entrance to the small back room, and he told him that he had injected cocaine and extracted some teeth, and that the woman had fainted, and then had a convulsion. As he approached the woman he thought he detected a small gasp, but her heart and pulse revealed no sign of life. The hands, however, were not cold, as stated, and there was no rigidity of the limbs. He was afraid she was dead, but he performed artificial respiration, and asked Zeifert to bring him some solution of strychnine, which he injected. He continued his efforts for half an hour. He then told Zeifert that there was nothing more to be done, and that he should communicate with the coroner. He had known Zeifert for three years, having attended him and his family in Commercial Road, E. He had a good knowledge of drugs, but the witness knew he was not registered in England. He understood, however, that he was a qualified chemist in Russia; by that he meant he had a licence. The witness did not understand anything about the Russian law or what the system of registration was there. He knew Zeifert's knowledge of drugs was sound. It was the first time he had seen a patient there. There were a good many medical men nearer Broad Street than he was, but Zeifert gave him no reason for not calling a nearer one. The witness was well known to him. The witness denied Farvish's statement that Zeifert used the word "manslaughter" in speaking to him.

By Mr. Barrington Matthews: The injection of cocaine by dentists was a very usual thing; the witness had had it used on himself.

The inquest was adjourned for a week, when

Morris Lulka, a fruiterer, of Berwick Street, Soho, stated that on the afternoon of the 18th inst. he went into Zeifert's shop to purchase some lint. He saw Miss Farvish in the shop. She was very excited and shouting, "They have poisoned my mother." With that, witness went towards the passage and heard a man's voice say, "Shall I send for a doctor?" and someone replied, "She will be all right in a minute." Witness went to the police-station and reported what he had heard. He had known Zeifert personally for about ten years, first in the East End of London, where he started in business as a chemist, and used to cure people at

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home of "odds and ends." Zeifert had extracted many teeth, and had never had an accident before.

Mr. Matthews pointed out that at the last hearing some stress was laid upon the supposed fact that the nearest doctor was not sent for, but the messenger went first to Dr. Edmunds, of Great Marlborough Street, and as he was not at home, he went on to Dr. Eder, of Charlotte Street.

Detective-Inspector Elias Bower said that when he told Zeifert that he would be chargad with unlawfully causing the death of Mrs. Farvish by administering to her cocaine, he replied, "I only injected half a grain into her gum. It was in ten drops of water; I have done it hundreds of times, and no harm has ever resulted until now." Witness afterwards searched the shop, and took possession of it.

The CORONER: What is the appearance of it?—The appearance of the outside is typical of a chemist's shop or drug stores, and there is on the facia "The Soho Drug Stores." On the glass panel of the door, witness added, were the words, "Teeth extracted," and on the window panes was an announcement that German and French were spoken there. Witness subsequently took possession of a large number of bottles labelled "Poison," evidently drugs used in dispensing.

MEDICAL OPINION.

Dr. Philip Henry Dunn, of Regent Street, co-divisional surgeon, said that at 5.30 p.m. on the 18th he was summoned to the shop, and reached there ten minutes later. The deceased woman was lying on a couch, dead. He thought she had been dead from one and a half to two hours. Zeifert told him that he had injected into her gum half a grain of cocaine in ten minims of water, at the same time handing him a glass syringe, also two teeth stumps. He said the patient had fainted, and that he had tried to revive her. Witness was asking an inspector whether Zeifert was qualified, when the accused admitted that he was not, and explained that he had been assistant to a doctor—he thought he said in Odessa—for two years before coming to this country. Witness thought half a grain of cocaine a dangerous and unnecessarily large dose, for a much smaller dose would have had the same effect, if sufficiently diluted and if adrenaline, a comparitively newer drug, had been added. Cocaine was a drug which acted differently, according to the individual, and there was no way of ascertaining that beforehand. Per-

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sons used to taking cocaine could take a much bigger dose as it was a drug that one soon got used to. It was certainly more dangerous to a person in a weak state of health, as the deceased was said to have been. It was always wise to have antidotes ready at such times. He had heard it said that the deceased woman became unconscious in a minute or two. Amyl nitrite, a drug well known to medical men, would have been useful, and, following that, ammonia, other remedies being brandy, artificial respiration, and hypodermic injections of strychnine; also hot bottles. As a rule poisoning by cocaine was rapidly fatal, and there was not much time to do anything. In his opinion, the woman's death occurred less than half an hour after the cocaine was administered, and probably less than ten minutes.

By Mr. Matthews: Zeifert did what was right and proper in giving the deceased woman ammonia.

By Inspector Bower: Beyond what Zeifert said there was nothing to show that he did not administer more than half a grain.

Inspector Bower added to his evidence that after Zeifert made the statement as to giving the woman half a grain of cocaine, and, that he had done it hundreds of times, witness said to him: "I have ascertained you are not a qualified chemist or druggist, or a doctor?" He replied: "I have no qualifications in England." "Are you qualified in any country?" was witness's next question, and Zeifert answered: "I have studied medicine for two years in Warsaw." Witness said: "Are you qualified there as a doctor or a chemist?" and he replied in the negative, adding that it was not necessary to have any qualifications to act as a chemist in that country. Inspector Bower went on to say that he searched the shop for scales, and found two pairs, one large and the other small, but the smallest quantity which could be weighed on the latter was two grains.

The CORONER: It may turn out to be a very important point.

Dr. Freyberger. who made an autopsy in the presence of Drs. Dunn and Eder, said the heart was disproportionately small for the size of the body, and the mitral valve was retracted and incompetent. The immediate cause of death was heart failure while the deceased was under the influence of cocaine. He had no doubt it was a death from cocaine, but no form of analysis would disclose the amount.

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The heart was in a condition which made the administration of cocaine more dangerous, there being valvular disease.

Mr. Matthews said he was going to put his client in the box as he was anxions to give the Court any assistance in his power.

ZEIFERT'S QUALIFICATIONS.

Isidore Zeifert, of Batoum Gardens, Shepherd's Bush, then stated that he was a Russian. He was 33 years of age, and had been out of Russia ten years and four months. At present he was keeping a drug store. When he first came to England he was dispenser for several doctors. He was not a registered medical practitioner or a qualified chemist or dentist. He had always employed qualified assistants, but had been without one since November last. From that date he had simply been carrying on a drug store. He had poisons, but never used them unless he had a qualified assistant. He had cocaine and used it, however.

You told Inspector Bower that you had done something hundreds of times. What was that?—Extracted teeth.

The witness added that he had extracted teeth a great many times under cocaine. He was in Warsaw Red Cross Hospital for five years, and afterwards assistant to a doctor for eighteen months, during which time he gave chloroform. He was seventeen when he went to the hospital, and was dresser and dispenser there. Medical degrees were given in Russia, and he was studying for one when he had to leave the country for political reasons. He tried to dissuade the the deceased woman's friends from having cocaine administered, but they would not hear of it. After the teeth were extracted she fainted right off in a second, and he did everything he could for her, giving her ammonia to smell and offering her sal volatile, which she was unable to take. He did not inject strychnine, because he did not wish to act the part of a physician. He was so nervous and too much excited, and his hands were shaking. This was because he had been suffering from neuritis for thirteen weeks. He thought the patient died five minutes after the cocaine was injected. He did not think it necessary to examine her heart. He had seen cocaine injected into the gum by hundreds of medical men in the Warsaw Hospital without previous examination of the patient. He had not examined a patient's heart for some years, as he was not able to distinguish the sounds.

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By the Jury: He had obtained his first situation by simply telling the medical man that he had studied medicine in Russia, but he had some diplomas and letters, which, however, he had destroyed six or seven years ago. He had been trying to get an English degree, and had studied to pass the London University Matriculation, but he was seized with neuritis.

The CORONER, in summing up, said the case was a very important one. This woman had undoubtedly died of cocaine poisoning, admittedly injected by Zeifert, a person who had no legal qualifications of any kind at all. Zeifert had made a series of statements of a reassuring character to the husband, although he knew the patient was dead—a most shocking thing to do. It was for the jury to judge whether he possessed any kind of knowledge to justify him in holding himself out as competent to these poor people.

The jury returned a verdict of manslaughter against Zeifert, who was taken into custody by Inspector Bower.

## LEGAL LIABILITY OF THE UNQUALIFIED.

AT Birmingham County Court, Annie Barlow, domestic servant, Gravelly Hill, sued Messrs. Cargill and Smith, manufacturers of artificial teeth, 6, High Street, Aston New Town, for damages for personal injuries caused through the alleged negligence of the defendants in pulling out two of her teeth. Mr. Cave (instructed by Mr. T. E. Jesson) appeared for the plaintiff; and Mr. Joy (instructed by Mr. P. H. Robinson, London), for the defendants.

Mr. Cave, in opening the case, said that on September 4th of last year plaintiff was suffering from toothache, and went to the defendants to have two teeth extracted. The defendant Cargill administered gas and extracted the teeth. Whilst one of the teeth was being drawn the plaintiff, who did not entirely lose consciousness under the gas, heard a snap. She was shown one of the teeth, but not the other, and was charged 2s. 6d. for the operation. What happened was this, said counsel: When one of the teeth was drawn a part of the jaw was brought away with it. Subsequently plaintiff suffered from septic poisoning, and on September 8th, Dr. Emery saw her and ordered her to bed. In order to ease her pain the doctor had to give her cocaine and other drugs, and

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on more than one occasion he removed portions of dead bone from the jaw. Plaintiff was in a low state of health as a consequence of the operation for a considerable time.

Plaintiff gave evidence and said she did not sleep properly for a month after the extraction of the teeth, and she did not do any work for a month.

In answer to Mr. Joy, she said she did not take any solid food for a month after the extraction.

Dr. Emery described the condition in which he found plaintiff's mouth, and said it was necessary to remove dead bone from the jaw on more than one occasion. The septic condition he attributed to the use of dirty instruments at the time of extraction.

In answer to Mr. Joy witness said a fracture of a small portion of the jaw during extraction was not in itself evidence of negligence.

Frank Scott, dentist, spoke to examining plaintiff on December 23rd. She was then in great pain, and her mouth was in a very septic condition. He attributed the condition to the use of dirty forceps.

For the defence, Mr. Cargill said he did not remember the operation, and it must have been quite an ordinary case or he would have made a note of it. Their forceps were sterilised without exception after every operation. For a portion of bone to come away at the extraction of a tooth was quite a common occurrence. He had examined the plaintiff since the operation and found her mouth perfectly healthy and normal. There was no evidences of shattered jaw.

By Mr. Cave: There was no other explanation of the condition of plaintiff's mouth when she was seen by Dr. Emery—if Dr. Emery's statements were correct—except the dirty forceps and the unskilful use of them.

Do you suggest Dr. Emery went into the box to make statements on matters of fact that are untrue? I know that if I had done such a thing I should have remembered it and made a note of it.

Do you tell your patients that you are not a qualified dentist?—I should if I was asked. He conducted the sterilisation of the forceps himself.

By Mr. Joy: During the whole of his twenty-two years' experience he had never had any claims in regard to septic consequences of an extraction.

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Dr. Billington said he had examined plaintiff's mouth on December 20th. She stated her general health was good. This could not have been so had she suffered seriously from septic poisoning so recently as the latter part of September or the early part of October. He did not see any evidence of improper or skilful extraction. The poisoning might have been set up by a septic tooth.

Mr. W. J. Watson spoke to examining plaintiff on October 24th. He found the mouth normal, and no evidence of unskilful treatment at the hands of the extractor.

Dr. Mabberley gave similar evidence. His Honour advised the jury that, so far as the legal aspect went, unregistered practitioners were just as much bound to bring to bear a competent degree of skill in the treatment of patients as those who were able to claim the highest qualifications.

The jury returned a verdict for the defendants.

## VALUE OF A SPOILED MOUSTACHE.

William Smith, a clerk, of 192, High Road, Balham, sued Robert Cox, a dentist, of 98, High Road, Balham, for £50 damages for personal injuries caused by the negligence of defendant or his servant in his profession of a dentist.

Defendant counter-claimed for £1 1s. for scaling plaintiff's teeth and preparing teeth for stopping, and against this plaintiff claimed a set-off of 12s. 6d., the amount paid to a dentist to finish the dental work uncompleted by defendant.

Mr. Duckworth was counsel for plaintiff, and Mr. Le Riche Schwabe for the defendant, the case being tried by a jury.

Mr. Duckworth told the jury that on October 15th plaintiff went to defendant's surgery by appointment to have some teeth stopped. He was attended, not by Mr. Cox—or probably the present action would not have arisen—but by an assistant employed by Mr. Cox. After the assistant had prepared plaintiff's teeth for stopping, he suggested that plaintiff should have his teeth scaled. Plaintiff agreed, and the assistant proceeded to scale his teeth. To do this he used a dental machine, which counsel explained in detail. He went on to say that plaintiff was the possessor of a very fine moustache, of which he was proud, and counsel suggested

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that in operating with the dental machine it was necessary to take care that the hairs of a patient's moustache did not get entangled in the brush of the machine. Defendant's assistant, however, took no precaution whatever to prevent this, and the result was that the brush caught the hair of plaintiff's moustache. It went on revolving and tying up the hair, until finally it caught hold of a large lump of hair and pulled it out by the roots. Plaintiff having had about a third of his moustache pulled out, the assistant stopped the machine, and expressed great sympathy with him. He offered to pay the expense if anything could be done to remedy the injury. Plaintiff, who was suffering great pain, refused to have anything further done to his teeth. He went to a hairdresser, who trimmed plaintiff's moustache into some sort of shape. Though the hair had been growing since October, plaintiff still had a sort of patchy appearance, notwithstanding that the other side of the moustache had been cut to make it less obvious. A good many roots of the hair had been removed, and it was possible that the hair would never grow again. On October 16th plaintiff called on Mr. Cox, who expressed no surprise, and said he had known something similar happen before. It was quite possible for the accident to occur, and he would speak to his assistant about it. On October 17th plaintiff wrote to Mr. Cox, complaining of the gross negligence of defendant's assistant, and asking if defendant had any proposal to make. No answer was returned, and on October 22nd plaintiff's solicitor wrote to defendant asking what he proposed to do. On October 24th defendant's solicitor replied denying that there had been any negligence whatever on the part of Mr. Cox's assistant. The letter also stated that plaintiff himself caused the mishap, and no one else was to blame, and added, "How trifling the mishap was is proved by the fact that your client took no notice of it, and made an appointment to have the teeth-stopping completed." These statements, said counsel, were untrue. He proceeded to add that on October 29th plaintiff went to another dentist, who completed the stopping of his teeth. Having failed to get any satisfaction from defendant, plaintiff had brought this action.

Plaintiff, a traveller and clerk in the employment of a firm of coal merchants, gave evidence bearing out counsel's statement. He accepted counsel's suggestion that when he went

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to defendant to have his teeth stopped he was "the happy possessor of a luxuriant moustache." Defendant's assistant, named Fritchie, who operated on plaintiff, took no precautions to prevent plaintiff's moustache being interfered with. The result was that the hair of the moustache was twined round the arm of the machine and torn out by the roots. Plaintiff's lip on the right side was naked. Before plaintiff realised what had happened the assistant rushed for a hairbrush and endeavoured to brush the hair from the centre of plaintiff's moustache over the bare portion. Plaintiff asked for a looking-glass, in order to see the extent of the injury, but the assistant hesitated to give it him. He said, My God, Mr. Smith, what have I done? What shall I do? Plaintiff got up from the chair, and then saw the terrified state in which the assistant was. Mr. Fritchie was pacing the apartment, and at intervals he said he should "get the sack," that he would have to give up dentistry, that he had never done such a thing before, and that plaintiff had better have his private address. He gave plaintiff his address, which was 3, Cecil Mansions, Marius Road, Balham. He told plaintiff that if anything could be done by a hairdresser to whom plaintiff was going he would bear the expense, and he could call and see plaintiff in the evening. Plaintiff went to Mr. Daniels, a hairdresser, in Station Road, Balham, and he cut plaintiff's moustache on the left side close to the lip, in order that it might balance with the right hand side. On the following evening plaintiff saw defendant. Defendant seemed to know what had happened, and said it was a thing likely to occur, and that he knew a gentelman who on one occasion had a clump of hair pulled out of the centre of his moustache. Plaintiff told defendant that his assistant stated that he could not stop the machine, and defendant replied that he could have done so. Defendant asked plaintiff to seat himself in the dental chair, and after a little demur he said, "Have a clean shave." "I declined his suggestion," said plaintiff "after twenty years wearing a moustache."

In cross-examination, plaintiff said he was satisfied that he would never again have a proper growth of hair on the right hand side of his lip, and he thought it was probable that he would have to shave his moustache off.

Counsel: When your moustache was pulled out did it hurt very much?—Plaintiff: It was very painful when it came out.

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You don't ask for damages for the pain?—I am asking for damages for the injury.

What injury?—It was a great disfigurement.

Counsel: While this was being done did you not put up your hand to your mouth?—Plaintiff: No.

While he was doing this burnishing you wanted to cleanse your mouth?—No.

Did the assistant not say, "Good heavens, be careful of what you are doing. If I had had an instrument in my hand you might have been badly hurt."—No.

He went on burnishing after this?—No. He was in too frenzied a state. He was frantic.

Frantic! What about!—What he had done—over taking off the best part of my moustache on the right hand side.

After that, did he make an appointment with you to come again?—No.

When you went out that day did you see defendant?—Yes.

Did you make any complaint to him?—No, he was engaged in the front surgery.

You went out without saying a word;—Yes.

In further cross-examination, plaintiff denied a conversation which counsel suggested that he had with defendant when he went to see him on October 16th.

Alfred Edward Orridge, a dental surgeon, of 272, Lavender Hill, said plaintiff called on him on October 29th, and witness finished filling two of his teeth. On one side of his upper lip plaintiff had a fair amount of hair, and on the other side he had practically none. Witness should not say that his appearance was improved. Witness described three methods by which the moustache of a patient might be protected. One was to fold a small serviette over the moustache and lip, and keep it in position by a rubber band round the head; another was to use a rubber sheet in the same way; and a third was to vaseline the moustache, although it was rather awkward to remove the vaseline afterwards. With a long moustache there was always some amount of risk of the hair getting caught in the machine, and in such a case witness always adopted one of the precautionary methods he had mentioned.

Charles Smith, assistant hairdresser to Mr. Daniels, of Station Road, Balham, said plaintiff had been a customer at the shop for four years. He had a fine moustache.

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Counsel: Better than yours?—Witness (stroking his own moustache, a bushy appendage): Oh, better than mine.

The Judge: I don't know that it could be made better.

Witness: You could do something with his; you can't with mine.

In reply to to another question, witness said that plaintiff's moustache could be trained to make it more picturesque. He added that there was a considerable bald patch on the right hand side of plaintiff's upper lip, where the hair had been torn out by the roots. Witness clipped the moustache on the other side to make the bald patch less apparent.

In cross-examination, witness said that at the end of the moustache on the right hand side the hair had not been torn out.

Counsel pointed out that plaintiff's moustache at the end on the right hand side was shorter than on the left. He asked if witness could explain how it was that the end hairs had not grown to the same length as those on the left side.

Witness said he could not explain it. After looking at plaintiff's moustache through a magnifying glass, he declared that he was unable to see any evidence of the hairs at the end on the right hand side having been cut or broken.

For the defence,

Defendant stated that when plaintiff was leaving his surgery after the occurrence of which plaintiff complained, witness met him in the hall. They passed the time of day, and witness asked if he was coming again. Plaintiff said "Yes," and passed out. Next day plaintiff called on witness and complained that part of his moustache had been pulled out. Witness examined the moustache under a very strong light—a 112 candle-power lamp—and found that a few hairs from the cheek where the moustache ended had been pulled out. Plaintiff said he would not have had the occurrence happen for £50, as it would damage him in business. Witness replied that no one would notice it. He did not tell witness that he had had his moustache clipped. He also said that he did not keep the appointment he had made with witness's assistant because he felt too nervous. At that interview plaintiff did not make any claim. Witness had been a dentist for 30 years, and had operated on thousands of men with moustaches. The proper method of operation was to hold the moustache out of the way with the fingers. That gave ample protection. Witness had never known of a

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case in which the hair had been torn out by a polishing brush. Witness's assistant was a skilful and careful operator.

Mr. Duckworth: Then you say that there was not, as plaintiff, Mr. Orridge, and Mr. Smith have stated, a bald patch, where the hair had been pulled out, on plaintiff's lip?—Defendant: It is an absolute lie.

To witness's knowledge, no dentist had ever used a serviette to protect a patient's moustache. It was absolutely unnecessary.

Froude Fritchie, assistant to defendant, who operated on plaintiff, stated that he was polishing plaintiff's lower teeth, and was keeping his moustache and upper lip out of the way with his hand, which was the general method. Plaintiff evidently wished to swallow, and he raised his hand and struck away witness's hand in which he was holding the brush. The brush was not revolving at a furious pace. When he struck witness's hand away, he said "Wait a moment." The brush, in consequence of plaintiff's action, got entangled in the end of plaintiff's moustache at the corner of his lip. Witness stopped the machine immediately and told plaintiff he must be careful, and also that if he had been using a steel instrument he might have hurt plaintiff pretty badly. Witness considered that the brush might have caught one or two hairs in plaintiff's moustache. "I am putting it very broadly," said witness, "when I say it brought off six. I went on with the operation."

Counsel: Is it true to say you stamped about the room in a frenzied state?—Witness: Absolutely untrue.

Or that you said it would ruin you in your profession?—Absolutely untrue. I never heard of such a thing.

You went on and finished?—Yes, I finished polishing the teeth and gave him another appointment. He was most affable when he went away.

Dr. Tweed, who examined plaintiff's moustache on January 8th, said there was a little loss of hair on the right hand side of plaintiff's upper lip, and young hairs were growing up. Young hair was supposed to grow at the rate of half an inch a month, and when hair was pulled out by the roots it would grow again.

Counsel: If people want to get rid of superfluous hair and pull it out, that is no use?—Witness: Not in the least. It grows again all the faster and stronger.

In cross-examination, witness said there was some loss of

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hair on plaintiff's lip, near the middle of the right hand side. It was consistent with plaintiff's story.

Counsel for the defence suggested to the jury that the case was a ridiculous and trumpery matter, which ought not to have occupied them five minutes or at all. Plaintiff did not claim damages for the pain he had suffered or for injury to his personal appearance. It was absurd to say that plaintiff had suffered from the loss of a few hairs. If it was a young lady seeking a husband one could understand the case.

After being addressed by Mr. Duckworth, and listening to the Judge's summing up, the jury retired. On their return into Court, they announced that they found for plaintiff on the claim, and awarded him £1 1s., and found for defendant on the counter-claim to the extent of 5s.

Judgment was given accordingly, plaintiff being given costs. No costs were allowed on the counter-claim, and the set off was dismissed.

# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

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# THE EFFECT OF AN EXCESS OF MERCURY UPON SHRINKAGE, EXPANSION, STRENGTH, CHANGE IN COMPOSITION, AND STABILITY OF DENTAL AMALGAM ALLOYS.*

By Marcus L. Ward, D.D.Sc., Detroit, Mich.

In the preparation for no other profession have sincerity, official supervision, a high degree of technical knowledge, and a high code of ethics been more vital than in this chosen one of ours; aud yet, within the decade, the societies of nearly every state in the Union have taken cognizance of the peril of too little dental training, and as a result the standard necessary for admission to the colleges, the curriculum in these colleges, and the conditions imposed by state boards of registration have been raised.

* Read before Section I of the National Dental Association, Minneapolis, July 30th, 1907, and published in *The Dental Cosmos*.



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This apparently concerted action of the profession to develop new standards, new ideals—in fact, a new profession—is so rapidly becoming manifest that every live man to-day must feel that he has a duty to perform outside the regular practice of dentistry.

It is with this sense of duty, rather than renewed enthusiasm to encourage a more generous use of amalgam, that I assume, along with other responsibilities incidentally connected with the subject, the task of explaining the effect of an excess of mercury upon dental amalgam alloys. I assure you, the more I work with this material the more conscientiously can I criticise those who use it too freely.

Since amalgam came into general use there have been a great many mythical properties imputed to it from different methods of uniting the alloy with the mercury. To many of the more profound these mysterious and often intricate methods of manipulation of others have meant nothing, and have been regarded as one of the idiosyncrasies of those practising such methods; but to a great many they have been regarded as some of the unexplained though necessary things to be practised, and at the sight of some new method of mixing the alloy and mercury many would decide to change their technique, and by so doing discover one of those unexplained though highly necessary methods for themselves.

One of the highly esteemed members of the profession comes to our meeting and does an operation with amalgam. He mixes the alloy and mercury in an ordinary rubber finger-cot, explains how he has done it for years, and attributes the major part of his success with amalgam to this one feature of his technique. You ask him what his reasons are for it, and he replies that it is nicer that way, that the filling lasts better, etc. The truth is that he expects the rubber

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cot to impart some of those mysterious properties and change shrinkage into expansion, excessive expansion into shrinkage, improve the strength and colour and permanence of form.

Or again, another member performs an operation with amalgam, and mixes the alloy and mercury on a glass slab with a large spatula. He likewise attributes a large amount of his success with this material to this treatment of the alloy and mercury. You ask him what his reasons are for it, and he replies in the same way, while the truth is that he really thinks that some decidedly desirable property comes from the glass slab and spatula.

Another member performs an operation with amalgam mixing the alloy and mercury in his hand; another uses the mortar and pestle, while yet another uses the mortar and pestle first and then turns it into an aseptic napkin to finish the mixing. This is indeed but an incomplete list of the methods employed by the various men in our profession, and might well appear to the layman an unquestionable exaggeration. It is true, nevertheless, and is unmistakable evidence of how little real thought has been given the subject by many of the men in our profession.

In like manner have the successes of many been attributed to the fact that the proper proportions of mercury and alloy have been used; while they have endangered their success, and perhaps by some other particular in their technique have involved consequences of almost if not quite as much danger as the conditions they have sought to remedy. A number of men have given so much stress to this feature that they have completely lost sight of others equally important.

It seems that many regard the proper proportions of mercury and alloy as secured by using that quantity of mercury which will unite with a quantity of alloy to form n

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amalgam. This is not the case ; instead, it is the amount of mercury which is to be used with a given amount of alloy to make a plastic mass. After the mass has become plastic and the alloy well dissolved, a little mercury is to be removed. Let me state here that it is seldom practical, and with the rapid-setting alloys it is impossible, to make a plastic mass with only just the amount of mercury that is to be left in the filling. A slight excess of mercury is required, if we put the alloy anywhere nearly into solution at the time of making the filling.

To illustrate more clearly, I will give you what actually takes place when tests are being made in the laboratory. When we are using one of our good high-percentage silver alloys that has come from the manufacturers recently, we follow the directions of the package, which usually state that the proportions are, approximately, mercury 7 parts, alloy 5 parts. Obviously, for every 25 grains of alloy we must use 35 grains of mercury. Now, there are two things, at least, that we must accomplish if we make a good filling—viz., we must make a mass that is smooth, fine-grained, and plastic enough to enable us to pack it, and we must put the alloy as completely as possible into solution in the mercury.

Suppose we weigh out, instead of 25 grains of alloy and 35 of mercury, 25 grains of alloy and only 30 of mercury. The very first thing we discover is that we cannot make a plastic mass, and when a plastic mass cannot be made we certainly cannot put the alloy into solution completely, or even approximately. If we now add 5 grains more of mercury to the 30 grains already in the mass we find that we can make a nice smooth fine-grained mass with the alloy well in solution in the mercury, and at the same time remove 7 or 8 grains of mercury. In other words, we have added 5 grains of mercury and removed 7

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grains, simply because we have softened the mass. In this filling, then, we have used 25 grains of alloy and 35 grains of mercury to make a plastic mass, but we have left in the filling only 25 grains of alloy and 28 grains of mercury. Before going farther let me again emphasise the fact that the amount of mercury that will make a plastic mass with a given amount of alloy is a little more than should be left in the filling.

This, however, is not what we mean by an excess of mercury as we are considering it here. An excess of mercury is an amount which exceeds the proportions just mentioned to such an extent as to make the mass of alloy and mercury sloppy.

## Alloys "After Black."

Since there are so many different alloys that behave a little differently from this class, and as a result deserve separate consideration, I shall be a little more specific and name some of the alloys that belong to this class, and define a little more clearly what this class of alloy really is. As you are all aware, since 1895-96 we have had furnished to us alloys commonly known as Black's alloys—some of which are really made as he would like them, while others are only crude imitations. Twentieth Century, Fellowship, Triumph, Permano, Acme, Micrometric, Rego, True Dentalloy, and Superior, and any others which are composed of from 65 per cent. to 68 per cent, of silver, 26 per cent. to 28 per cent. of tin, 3 per cent. to 5 per cent. of copper, and 1 per cent. to 2½ per cent of zinc, fall into the class that we are now considering, though we must not consider all alloys which fall into this class through the proper composition desirable ones to use, because shrinkage, expansion, and strength are controlled by at least four things—viz., composition, fineness of

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comminution, annealing, and the casting. Since this class of alloys are similar in composition and behaviour, let us examine the proportions advocated by their makers on the circular matter accompanying each package of alloy :

| | Parts. |
|---|---|
| XXth Century circular says ... ... ... ... | 7 to 5 |
| Fellowship „ „ ... ... ... ... | 7 „ 5 |
| Triumph „ „ ... ... ... ... | 7 „ 5 |
| Permano „ „ ... ... ... ... | 7 „ 5 |
| Acme „ „ ... ... ... ... | 7 „ 5 |
| Micrometric „ „ ... ... ... ... | 6 „ 5 |
| Rego „ „ ... ... ... ... | 5 „ 4 |
| True Dentalloy „ „ ... ... ... ... | 11 „ 9 |

If we now compare the smallest amount of mercury with the largest we find that there is a difference of 5/42 of a grain for every grain of alloy used. We note, then, that the proportions of mercury for our best quick-setting alloys are practically alike, and that they are all greater than the alloy.

In seeking an explanation of things, we are too often apt to be influenced in our estimate of the cause by the magnitude of the effect —to seek an hypothesis in the remote and the complex instead of the simple and the near ; but, that I may give you a glimpse of several things from a new, or at least from an unfamiliar viewpoint, I must refer you to the work of Black, the author, and possibly others. Black advanced the theory that when an alloy had been cut into a convenient form for use it must be heated a certain time at a certain temperature to make a product that would not be affected by the temperatures that it would necessarily be subjected to by standing around. He also advanced the theory, since recognised as a fact, that with this heating less mercury was required to make a plastic mass. If we refer to the following chart we will see how this change took place

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in one of our best alloys, cast for me by one of our leading manufacturers :

*Formula*—Ag 68, Sn. 26.50, Cu 4.20, Zn 1.30 equal 100.

| Test. | Time of Annealing at 49° C. | Percentage of Mercury. | Points of Expansion. | Manner of Setting. |
|---|---|---|---|---|
| No. 1 | 0 | 63.00 | 19 | Extremely rapid |
| „ 2 | 1 day | 59.00 | 7 | Slower |
| „ 3 | 2 days | 58.00 | 3½ | „ |
| „ 4 | 3 „ | 57.40 | 1½ | „ |
| „ 5 | 5 „ | 57.25 | ¾ | „ |
| „ 6 | 7 „ | 57.00 | ½ | „ |
| „ 7 | 10 „ | 56.60 | ½ | „ |
| „ 8 | 15 „ | 56.10 | ½ | „ |
| „ 9 | 20 „ | 55.50 | ½ | „ |
| „ 10 | 25 „ | 54.80 | ½ | „ |

First let us notice that a large part of the changes in proportions that took place did so during the first two days, though it continued to change a little during the twenty-five days. Next let us notice that the same is true with regard to the points of expansion and manner of setting. Third, let us notice that the percentage of mercury, points of expansion, and rapid-setting tendency were all reduced with each of the first five days' annealing ; but at this point I desire to call strongly to your attention the fact that while the percentage of mercury, the amount of expansion, and the manner of setting go hand-in-hand with the annealing, there comes a time when the annealing has less effect upon the amount of expansion, though it continues to reduce the percentage of mercury required and makes the alloy set a little slower. When a manufacturer is preparing such an alloy for the market, he of course takes everything into con-

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sideration, though this material, like all others, has some qualities which are of more importance than others; obviously the amount of expansion and the manner of setting are of more importance than the percentage of mercury. From this we can see that if a manufacturer places his alloy on the market when it expands from 1 to 2 points, little or no change will take place in the amount of movement, though there will certainly be slight changes in the amount of mercury required, and the alloy will set slower than when it was placed upon the market. If, then, a manufacturer tells us to use 7 parts of mercury and 5 of the alloy, that means that the proportions are 7 to 5 for a reasonable length of time, after which the proportions should be reduced; and if the alloy has stood on sale for a year or over, it is not so desirable to use.

I have had in my possession now for nineteen months quantities of the following alloys: Twentieth Century, Fellowship, Triumph, Acme, and True Dentalloy. When I purchased them nineteen months ago the proportions advocated by their makers were about right. The first mentioned required about 7 parts of mercury to 5 of alloy, while now I can make a nice plastic mass with 6 parts to 5 parts. The second required 7 parts to 5 parts; now 6¼ parts to 5 parts is sufficient. The third required 7 parts to 5 parts; now 6 parts to 5 parts is sufficient. The fourth required 7 parts to 5 parts; now 6¼ to 5 is sufficient. The fifth required 11 parts to 9 parts; now 10 parts to 9 parts is plenty.

You may quite consistently ask at this point, "Should I weigh out the mercury and alloy?—and if so, how am I to know just how old the alloy is, and how much mercury should accompany a given amount of alloy?" With increasing clearness we now begin to see that this is one of the complex

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problems that we have to deal with; that, like a score of other things upon which we are forced to deliberate, the influences which we are using to bring about a certain result do not succeed in the purpose with which they are being concentrated; and that we finally accept an abnormal, unusual, or even undesirable quality of lesser importance to bring about a result which is more desirable when taken as a whole.

We have now seen that the amount of mercury which should be left in the filling is not sufficient to make a plastic mass, and the amount of mercury which will make a plastic mass when the alloy is fresh is constantly changing. With these facts in view there remains but one option for us—viz., to use a generous amount every time, and remove some of it as soon as we have softened the mass sufficiently to enable us to do with less mercury. If we summon our actual observation and experience to a comparison of alloys and their use with other materials and their use, we find not a single instance where appearance, strength, adaptability, and stability have been assembled in one material.

In our alloys we add a little zinc in order to improve the colour and to cause the alloy to work better, but in other respects this addition is questionable. There is also a quantity of tin added to make the alloy more plastic, while it is with extreme difficulty that we find tin desirable in other respects. Similar comment may be made in the use of copper and silver. No one constituent seems to possess all the qualities desirable in such a filling material. At present, with our somewhat limited knowledge, we are forced to sacrifice something on some of the properties so that we may improve others. It now becomes imperative that we determine which quality is improved and which injured by what we know to be an excess of mercury, and draw our conclusions as to which quality shall be given the preference.

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## Effect of Excess of Mercury Upon Various Qualities in Amalgams.

The quality of supreme importance in any filling material is that it shall be free from shrinkage and expansion. As we have just seen, it is indeed a difficult task to furnish an alloy that is absolutely free from movement during the setting process. To be certain that there shall be no shrinkage, most manufacturers market their alloy when it is in a condition to expand slightly, though if it be not carefully made it will even then change enough to shrink slightly in the course of a year or two. We see, then, that we are dealing with alloys which usually expand a little, though we may get one that shrinks a very little. Now, if an alloy expands with a given amount of mercury, what should we expect if we use a little more? We certainly would expect a little more of the alloy to be dissolved, and as a result it would expand a little more, unless the composition has been changed materially.

On the other hand, if an alloy were shrinking, with the proper proportion of mercury, we should expect that, unless certain constituents had been removed, a little more alloy had been dissolved and as a result it would shrink a little more. Experiment after experiment not only proves that the composition is but slightly changed, with the proper manipulation, but our reasoning is corroborated to the letter.

We are, without doubt, safe in stating that, with the class of alloys under discussion, the movement which accompanies the setting process, whether it be shrinkage or expansion, is increased by an excess of mercury and plenty of kneading. In the early part of my work shrinkage appeared to be the only result of any excess of mercury and plenty of mixing, but the reasons for this soon became apparent when I began to prepare alloys especially for this purpose. Since that time

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I have found that, while the movement is not quite so pronounced, expansion will be the result if the alloy be really an expanding alloy.

A study of the mass expressed from amalgam during the mixing reveals that portions of the alloy have been carried out with the mercury. It also reveals that certain constituents are carried out in greater quantities than others. These constituents, as we would naturally expect, are the ones which are most soluble in mercury. After an extended study of the mass removed and excess of mercury it appears that the changes produced in the composition of a filling depend largely upon the length of time the alloy is manipulated, though the amount of annealing and the composition modify the change produced considerably.

It seems quite apparent that, if a given change was produced with a given alloy, were that alloy to stand around until it becomes much softer and sets slower by a more thorough annealing, a much greater change could then be produced as a result of this increased softness. On the other hand, if the alloy were one which had been incompletely annealed, it would work harder and go into solution tardily, and consequently less change would be produced.

Any change in composition which affects the solubility of the alloy in mercury, or in the time required for the mass to set, must likewise affect the amount of change produced by excesses of mercury and plenty of kneading. While these are some of the conditions which we are constantly meeting, and which are well worth consideration, I want to call forcibly to your attention the fact that large quantities of mercury have almost no effect upon a given amount of alloy unless the two are worked together. Simply pouring mercury into alloy will not put it into solution, and if the alloy is not put into solution we cannot expect changes in movement

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strength, composition, or anything else to take place. It is the working of alloy with large quantities of mercury that produces marked changes. The analyses that I have made show that with a well-made alloy and the proper proportions of mercury, less than 1 per cent. of tin has been removed, while with a large quantity of mercury and plenty of kneading about 3 per cent. can be removed, the other constitutents remaining in about the same proportions. While we might expect the removal of a constituent whose behaviour with mercury was shrinkage, to increase the expansion or diminish shrinkage, it does not always work out that way, apparently for the reason that other things than composition control shrinkage and expansion. For this reason many have weighed but lightly the theory advanced by Black, that a formula represented practically nothing, while if they will carry deliberations to this particular branch of the work they will also find that the removal, with an excess of mercury, of limited proportions of certain constituents is not sufficient to overcome the effect upon shrinkage and expansion produced by other things which help to control the shrinkage and expansion.

With the class of alloys under consideration, we are able with the proper manipulation to develop, when they are new, a crushing resistance of from 400 lb. to 500 lb. on a filling one-eight inch in diameter and one-eight inch high. If, however, the alloy be worked with too little mercury, or if it be kneaded only a little, the crushing resistance of the same sized filling may be less than 100 lb. With a given alloy we may produce a filling with almost any strength by varying the manipulation and percentage of mercury. If the maximum strength of these alloys were constant, if we could expect a filling one-eighth inch in diameter and one-eighth inch high to resist a force of 500 lb. month after month and

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year after year, we would have little cause to complain about the strength of these alloys.

But, in addition to the changes which take place in the movement accompanying the setting, the percentage of mercury, and the time required to set the mass, the annealing produced by the alloy standing around causes a decided decline in strength. Alloys which resist 500 lb. when new will often become so much annealed in one year that 150 lb. to 200 lb. is the maximum strength which can be developed. I have in my possession five or six alloys with which I could make fillings that would resist 450 lb. to 500 lb. eighteen months ago, while now 200 lb. to 220 lb. is the maximum.

While I am led to believe from my observations that alloys get weaker with age, I have nothing to show but that in all cases the strength of the alloy is increased with a slight excess of mercury, provided the kneading be done in the same way as when the right proportions are used. If we get the alloy when its strength is about 450 lb. we can improve it a little with a slight excess of mercury, and the same is true if we get it when it is a year or two old and resists a force of only 200 lb

I do no mean to infer that this is what takes place when large excesses of mercury are used. This holds true only when the amount of mercury used is slightly more than in what we have decided were the right proportions, because there must be friction in the mass.

If each little filing does not rub against the other rather than glide around freely in a largely amount of mercury, the alloy will not be sufficiently dissolved to develop strength. It must also be understood that the excess mercury must be removed after the mass has become fine-grained. If the excess be left in the filling and the mass is sloppy while being packed, another condition presents itself—one which, I fear,

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is of more importance than any other phase of this subject.

On the 19th of January I discussed before the Chicago Odontographic Society (see *Dental Review*, vol. xxi., No. 4) some changes in the strength of alloys which appear to be unavoidable. About one year previous to that time I made two hundred fillings from two of our best alloys. They were made one-eighth inch in diameter and one-eighth inch high, and with the intention of developing about all their strength. Six of these fillings were broken at a time with a dynamometer at varying intervals, from that time up to the present. An average of the fillings thus broken was taken as the crushing resistance of the alloy at that time, and was as follows:

*Composition Percentages.*

Alloy No. 1.

| | |
|---|---|
| Silver | 68.00 per cent. |
| Tin | 26.50 „ |
| Copper | 4.20 „ |
| Zinc | 1.30 „ |

Alloy No. 2.

| | |
|---|---|
| Silver | 65.50 „ |
| Tin | 25.50 „ |
| Zinc | 3.00 „ |
| Copper | 6.00 „ |

*Crushing Resistance.*

| Age of alloy. | Alloy No. 1. | Alloy No. 2 |
|---|---|---|
| 1 day | 435 lb. | 452 lb. |
| 2 days | 478 „ | 462 „ |
| 4 „ | 485 „ | 453 „ |
| 24 „ | 493 „ | 447 „ |
| 42 „ | 497 „ | 447 „ |
| 85 „ | 475 „ | 433 „ |
| 205 „ | 414 „ | 367 „ |
| 341 „ | 344 „ | 310 „ |
| 491 „ | 187 „ | 163 „ |

The first thing for us to notice in this connection is that a certain time is required for the alloy to reach its maximum. Second, that the period of maximum strength lasts but a short time, after which the alloy begins to deteriorate in strength. When we see that the first alloy had a crushing resistance of 497 lb., and in less than two years it had one of

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187 lb., and that the second alloy, whose resistance was 492 lb., deteriorated to 163 lb., in the same time, are we not inclined to ask: Is there a definite crushing resistance to this class of alloys? The question becomes the more forcible when we consider that the alloy deteriorates before it is made into fillings as well as afterward. With these changes going on in the alloy before it is made into fillings, and a similar change going on after the filling is made, it is indeed difficult to say what the effect upon strength of an excess of mercury in the filling is, without stating the age of the alloy before it is made into filling, as well as the age of the filling itself. With other conditions the same, the filling which is packed with too much mercury in it is weaker than one that is packed at just the consistence to squeak under the force of the plugger—a condition which we should not be surprised to find when we compare it with other materials we handle in which the solvent has been left in excess. A definite relationship between the solvent and the substance to be dissolved also appears to give us a filling more permanent in form than one in which the solvent is in excess, though there must be undissolved material for the excess of solvent to act upon if a great amount of movement take place. While it is true that changes in temperature often affect substances composed of materials with low melting-points and weak affinities, it has been my observation that undissolved material and an available solvent are capable of producing more change than anything else.

## Conclusions.

The following conclusions may be deduced from the foregoing discussion:

(1) If the maximum strength is developed at the time of making the filling, and the minimum amount of movement obtained after the filling is inserted, it is imperative that the alloy be well dissolved in the mercury.

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(2) More mercury than we should leave in the filling should be used to put the alloy into solution.

(3) At no time during the mixing of the alloy and mercury should the mercury be in such proportion as to make the mass sloppy. If it be in such proportion it is said to be in excess.

(4) At no time after the mercury and alloy have been ground in the mortar at least 1¼ minutes and mixed in the hand 1 minute should the mass be so non-coherent as not to take markings of the skin with light pressure. If it is in such proportion then there is too little of it.

(5) Alloys of like composition may vary a little in the amount of mercury required, because the annealing and comminution may vary a little.

(6) The amount of mercury advocated by the makers of this class of alloys is approximately correct for one year, providing the alloy has been kept at office temperature during this time.

(7) If the alloy be kept at these temperatures for a larger period than one year the percentage of mercury should be lessened in proportion to the age, or the alloy should not be used—the latter course being preferable.

(8) Large amounts of mercury do little harm to a given amount of alloy if the two are not worked together.

(9) The effect of a slight excess of mercury upon an alloy that shrinks is to increase the shrinking.

(10) The effect of a slight excess of mercury upon an alloy that expands is to increase the expansion.

(11) The effect of an excess of mercury upon change in composition is to remove the constituents most soluble in mercury—viz., tin and zinc.

(12) These alloys deteriorate in strength before as well

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as after they have been made into fillings, hence have no definite crushing resistance.

(13) The effect of slight excesses of mercury upon the strength, whatever it may be at the time of making the filling, is to increase it—assuming, of course, that the excess was removed before packing.

(14) The effect of a slight excess of mercury upon stability is to increase it, if the excess be removed before packing, and to decrease it if it be not removed before packing.

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RELATION BETWEEN DENTIST AND PATIENT. — The patient does not desire to avail himself of the skill of the professional man because it will enrich him or advance his position in the world, but is driven to the necessity of obtaining it in order that he may be relieved of an ill or a discomfort. This relation between the dentist and the patient imposes a special moral obligation upon the one exercising his skill. They usually come dreading the operation and probable expense, without a full understanding of the time consumed in acquiring the necessary knowledge and manipulative ability to do the work skillfully and with thoroughness. Thus when we have spent what seems to them a short or long time, according to the pain endured, in doing a certain operation and ask a reasonable fee for our services, we are immediately classed with brigands or some other characters. The cause of this is probably the low prices of the inefficient, careless practitioner, or by reading certain advertisements in newspapers wherein ridiculously low prices are named for certain work.—*H. T. Davis, St. Joseph, Ill.*



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British Journal of Dental Science

LONDON, MARCH 2, 1908.

## EVADING THE DENTAL ACT.

THE recent death after an injection of cocaine in Soho has elicited a number of letters to the *Western Daily Mercury* in which many sides of the "unregistered" subject are commented upon. An L.D.S. leads off by criticising the law in scathing terms.

> "We have no law 'to restrain' the Heaven-born liberty of any quack who may practise medicine, surgery, or dentistry, providing he does not call himself doctor, surgeon, or dentist. So that the "professor,' 'manager,' 'dodger,' or so-called company have merely to trade on the virtue of their unadorned name (generally very large) and the wonderful promises they hold out to degrade an honourable profession, and enrich themselves at the expense of all concerned."

This writer prophesies that when the above-mentioned case comes on for trial the result will be identical with that of former similiar cases and that the unregistered practitioner will be let loose on confiding humanity once again.

Following this comes an enquiry from a layman as to how the present dentists have got on the Register, and the restrictions, if any, as to their advertising. This is always a puzzling subject for a layman to grasp, but it is very well dealt with by some other L.D.S. correspondents who point out the mixed crowd which got on the Register by some means or other, and also show how the removal of the advertising registered man from the Register is no punishment to him, as it leaves him still more unrestrained liberty to advertise. He can no longer call himself a dentist, but "What's in a name?" So long as he keeps a dentists'

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establishment and professes to look after the public's teeth, he is a dentist in their eyes. One cannot split up a dictionary word in an arbitrary manner, no matter how many Acts are passed. To do any good it is the *thing* and not the *word* which must be dealt with, though it is wise to inform the public that they can always distinguish the unregistered by the avoidance of the word "dentist," &c., by the latter fraternity.

The other letters are from non-dental writers, most of whom are on the side of the licensed practitioner. A firm which purchases old sets of artificial teeth comments as follows :—

> "Outside the merits of qualification for dental practice comes another view of the question, and a most serious one. As buyers and breakers up of dozens of cases of false teeth weekly, we are permitted to make the statement for the good of the public that if they could see the utter rubbish and dangerous condition of false teeth supplied by some of the unqualified dentists to their patients they would go toothless for the rest of their lives, preferring porridge to Highland beef."

This statement as to worthless rubbish is also corroborated by a lady correspondent who works a great deal among the poor. A "Private Tutor," who has prepared many dental students is astonished that the law requires so much from the qualified dentist and gives so little protection in return. This is also the opinion of "A University Member," who writes for himself and a friend, saying that after having paid a premium and passed the preliminary, they had come to the resolution to abandon a profession where the untutored empiric ranked in the eyes of the public with the man who had conscientiously gone through his curriculum. The letter finishes as follows :—

> "Other countries beside England have found the need of an educated dentist. South Africa some time ago rose in anger, and had a regular exodus of dental quacks; Germany and Holland have had a similar sifting; nor are our Colonies behind—Australia and New Zealand are well to the front, and as for Canada, the Toronto University requires the L.D.S. of the old country or its own as a necessity for practice, or as a preliminary to the higher degree of Doctor of Dentistry; whilst Rome goes so far as to require seven years of training. The quack may say the whole civilised world has made a mistake in demanding culture, but sensible people will rather credit the universal

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verdict. I have nothing but respect for the highly specialised branch of the healing art I have left—but to get my living in it under present conditions—no, thank you."

The discussion, as far it has gone, finishes with a letter from "A man with a poor man's pocket," the gist of which is as follows :—

"Providing the unqualified man observes the requirements of the Dental Act, I cannot see where the dentists have reasonable ground of complaint,

"The solution of the difficulty is in their own hands. Let the fully-qualified dentists so modify their charges that the industrial classes can get a good, well-fitting case at their real value, and the need for the unqualified practitioner will cease,

"Thousands go to the latter because his prices better suit their pocket. Dentists could easily command the whole field by having a uniform standard of prices and by adopting the popular draper's motto, "All goods marked in plain figures."

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Proposed Memorial to Professor Miller.—It has been suggested that a memorial should be established in honour of the late Professor W. D. Miller, in recognition of his great services. An International Committee has been appointed, and it is proposed to establish a fund, the interest of which shall be given as a prize for original work in dental science. It is hoped that the dental profession of Great Britain will respond freely. Mr. Howard J. Mummery, of 10, Cavendish Place, London, has been appointed as the British representative, and he will be glad to receive any contributions from 10s. upwards.

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Unregistered Dentists.—At a meeting recently held at Torquay of the registered dental practitioners of Torquay and Paignton the following motion was carried : "That in view of the rapidly increasing number of unregistered persons practising dentistry and evading the Dental Act of 1878, we appeal to all registered dental surgeons throughout the country to use their utmost endeavour by local combination to assist the authorities in taking steps to amend the Act and whenever possible to bring forward cases to en-

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able them to take action." The following resolution has been signed and sent to the General Medical Council: "We the undersigned registered dental surgeons in practice in Torquay and Paignton, S. Devon, desire to draw your attention to the urgent need for some action to be taken to check the increasing evil of unregistered persons practising dentistry and evading the Dentists' Act of 1878. During the past two years ten or more unregistered persons have started practice in these towns and the vicinity and we feel it is quite time that something should be done for our protection. (Signed) —Torquay: J. R. Andrews, F. N. Codrington Butler, Frank Briggs, J. Garnet Hernsted, Alfred Hunt, H. Helyar, T. S. Kendell, L. Strangways, J. Glanville Turle, and Rupert Wheatley. Paignton: C. B. Grenville, William Foot, James Petherbridge, and W. R. Whelock."

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New Bills.—The Earl of Crewe has introduced into the House of Lords a Bill "to regulate the sale of certain poisonous substances, and to amend the Pharmacy Acts." The Bill was read a first time. Sir John Batty Tuke introduced into the House of Commons a Bill to prohibit joint-stock companies from acting as physicians, surgeons or medical practitioners. The Bill, as a matter of form, was read a first time. Legislation dealing with this subject passed through the House of Lords last year, but owing to the congestion of business it failed to be considered by the House of Commons.

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False Teeth for a Pauper.—Chapel-en-le-Frith, in Derbyshire, is agitated just now in regard to the momentous question of false teeth for paupers. The guardians are men of wide views, one suggesting that sets could be obtained at prices varying from one guinea to one hundred. Another thought there should be a limit of £5, and eventually it was decided to make a start by supplying a lady inmate with a set at 50s.

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No Grey Hairs at 88.—Miss Catherine Aggio, who died at Colchester recently, after only two days' illness, at the age of 88, had not a single grey hair. Her teeth were perfect, and her complexion was wonderfully clear.

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Donations to Dental Hospitals.—The Royal Dental Hospital, Leicester Square, has received a donation of £100 in this its jubilee year from the Company of Goldsmiths, and the Victoria Dental Hospital of Manchester will benefit to the amount of £2,000 under the will of the late Mrs. John Rylands.

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According to the *British Dental Journal* "The Hungarian Stomatological Society have honoured themselves and their colleagues of other countries by the election of eminent representatives abroad as Honorary Corresponding Members. In pleasant anticipation of interesting coming events, the Society, meeting at Buda-Pesth on September 27th, 1907, conferred this dignity upon Messrs. Kenneth Goadby and J. G. Turner, accompanying the compliment with a suitable "diploma" certificate, which, as Magyar things inevitably are, is quite a work of art."

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The *Montreal Witness* remarks: "With a sharp pointed steel drill in his stomach, Mr. Andrew Bowlby, one of Windsor's best-known citizens, is moving about gingerly and wondering what will happen next. While in a dentist's chair recently a small drill used for boring a diseased tooth became detached, and before it could be caught had slipped down Mr. Bowlby's throat, and presumably into the stomach, where it now reposes. The doctors may use the X-rays to locate the drill."

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# Abstracts of British & Foreign Journals.

## THE DENTAL HOSPITAL AND ARTIFICIAL TEETH.

THE *Westminster Gazette* says:—"In our columns recently a correspondent made some complaint that, although she believed the Dental Hospital to be a charity, she was there asked to pay £4 for artificial teeth, which is more than many of the cheaper outside dentists charge. We made some inquiries at the hospital, and were able to confirm officially the existence of this charge. A representative has since visited the hospital and seen the senior surgeon, Mr. J. F. Colyer, who is also the Dean of the Dental School, and who did not feel that justice had been done to the difficulties of a hospital which, while a charity, is still heavily in debt, and has consequently to use all its money in treatments, charging for dental appliances whatever these may cost. The teeth are supplied by the Dental School, although the money is paid to the hospital, and the non-appearance of this item in the accounts of the hospital is explained by the fact that the whole of the money is paid over to the Dental School for the appliances, which are made without profit.

"That is quite true," admitted the Dean, "but the Dental School relieve us of the responsibility altogether. They keep the accounts with regard to the teeth payments, and the charges made just cover the expense for materials, salary of the curator, and incidental expenditure. I can assure you that not a penny of profit is made, as you would see from the accounts of the School. These are, however, quite private accounts, and have nothing to do with the hospital. We have, on an average, some sixty dental students, and we have to provide them with a certain amount of denture work. We state in our notices that dental appliances are only supplied 'in a limited number of desirable cases.'

"In 1904," he went on, producing that year's balance-sheet, "there was a heavy deficit in this department owing to a great increase in the cost of material, and the School then took over the accounts for artificial teeth, which are now

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supplied without any loss—for there is never a profit—falling upon the hospital.

"It is quite true that £4 may seem a large sum, but, although there are American dentists who supply a set for a guinea and upwards, it is, I think, admitted that there is no comparison either in workmanship or material. That must be patent when I assure you again that we never make any profit."

The Dean admitted that instalments from patients were invariably refused, but argued that it would be quite impossible to carry on the denture work satisfactorily if the full amounts were not paid in at the time. "Certainly, on the face of it," he added, it does seem anomalous to announce a charge of £4 on a circular which is addressed to the 'necessitous poor,' but very often their friends assist them, and we frequently have cases in which help is received from charitable funds."

With regard to the patient's complaint that she took cold from waiting outside the door "this bitter weather," and that "when I got in I had to wait two or three hours before I saw anyone," the Dean said it was quite obvious that if people came to the hospital before the stated times for receiving, as must have been the case here, they would have to wait. Moreover, inside the hospital it was equally obvious that patients must take their turn. "Anæsthetic work and teeth-filling, &c.," he said, "cannot be done in five minutes"; and by way of illustration, he pointed out patients then being operated upon. In one case the operator said he would take quite an hour and a half, and in another case over an hour. "With a limited staff," he went on "it is thus quite clear some patients must have to wait, but once inside the hospital there is no discomfort or liability to cold"—indicating, as he spoke, the spacious waiting rooms, which even then had a fair quota of that day's patients.

The Dean also declared that it was not an infrequent occurence for the hospital to return the patient's money. "It is quite absurd," he continued "to say that, supposing a patient dies before the teeth are done the £4 would be lost. In a case of that kind we should certainly refund the money, I may point out that money has been returned in numerous instances where, after several attempts, the patients have complained that the teeth were not comfortable, or have found some fault with them, and preferred to go to a dental

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surgeon. You are bound to get a percentage of people who will never be satisfied, and if, after all, they want their money back, we give it to them."

Our representative was shown over the building, and can bear testimony to the fact that the arrangements and appliances are thoroughly well-ordered and up-to-date; that the comfort of the patients is studied; and that a great deal of useful work is being done. This year the hospital celebrates its jubilee, and it is intended to hold a memorial dinner. "Yes," said the Dean, "I agree that the best memorial we could have would be the extinction of this £4 charge for teeth, and if the hospital debt of £30,000 could be wiped out we should have no difficulty in doing it. As it is, I hold that we have no option but to make the charge, and it ought to be pointed out that the patients who purchase these teeth get more than value for their money. The material alone in each denture alone costs, on an average, 14s., for we supply metal plates, and use only the very best of everything. Deduct that from the £2 charged for a single denture, and we have not much left to work upon."

"All the same," he concluded, "I personally loathe the charge, and should be more than glad if, in this jubilee year, we could wipe it clean away."

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## THE APPLICATION OF BUSINESS PRINCIPLES TO DENTISTRY.

By Frederick Crosby Brush, D.D.S., New York, N.Y.

In looking over the broad field of commercial business in search of principles or methods that may properly be adapted to a professional practice, one is impressed that a main factor in attaining success is to have at command all necessary detail with the least possible expenditure of time and labour. It is quite evident that this can best be accomplished by systematic methods and it is found that the principle of system does and must predominate in all branches of business that show the true elements of success. In fact system and success seem almost synonymous.

System, however, does not mean the encumbering of business with a mass of unnecessary methods, detail and

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data, an error quite frequently made ; but on the contrary, it tends toward simplifying customary methods for the sake of convenience and exactness.

While system as a principle is exceedingly broad and is applicable to all phases of professional practice it is intended in this instance to refer more particularly to its application in keeping necessary records. The methods described in this paper are offered as a suggestion and are not given with the idea that they are ideal or complete, for it is not probable that a set system will ever be devised that will fill satisfactorily the wants of all practitioners.

The many changes and improvements that have been made in the means of keeping records have caused the term "book-keeping" to become a misnomer, which should become obsolete ; and it would seem better to adopt in its place, the more comprehensive term "record-keeping."

The first and most important record to be considered is that of "Cases," covering all operations and the data connected therewith, which should be kept in some form by every conscientious practitioner. The keeping of such records is essential from many standpoints ; in the first place, they are of great importance as evidence in suits for malpractice or damages, in pressing claims for collection and other legal matters ; they greatly facilitate the planning of the day's work and the arrangement of appointments and also assist in advising patients at a distance who may be in trouble.

There are on the market many books and cards with a variety of diagram forms designed for the keeping of such records ; all of these have some good features—some of them many useless ones.

An objection that has been made to the book method is that it is cumbersome in form and bulk, entailing the handling of a lot of useless material—first in the form of blank sheets, later by what may be styled "deadwood." Usually this method also involves the keeping of separate examination or working slips to record the day's work, and these have to be copied into the book later, necessitating extra time and labour.

At the end of the month, when checking up accounts and sending statements, it becomes necessary to go over all the accounts in the book in order to locate the live ones. If the charge or ledger account is kept separate from the case re-

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cord it means an additional book to write up, and the same objection holds good. The loose leaf system is something of an improvement over the older method, and perhaps can be used to advantage where a competent secretary is employed.

To the busy man who prefers to take charge of his own records a good card method will be found to possess many advantages. The cards should be of a suitable size to fit in a metal case, and this case and its contents should be kept in a safe. Records so protected are likely to go through a small fire with little or no material damage. These records are usually the most valuable asset in an office and practically the only things that cannot be duplicated in case of a loss by fire.

The styles of diagram and ruling to be used are very largely one of individual preference and needs, but they should be be selected with an aim toward efficiency in recording necessary detail, and to show such detail clearly in case of future reference. Many books and cards are ruled with innumerable columns for recording specific operations. This seems a waste of valuable space and time, and may lead to many errors. A card with a suitable diagram of the teeth on one side and plain ledger ruling on the other is the most satisfactory, for it combines effectiveness with simplicity.

When called upon to make an examination of a mouth it should be done systematically and with care. A really thorough examination of the teeth for cavities and other blemishes cannot be made unless the surfaces of the teeth are clean and thoroughly dry.

In making the examination have a definite starting point, say the left upper molar, and work around toward the right side, and then the same way on the lower arch, noting carefully every condition and deficiency and entering them upon the chart. If a tooth is missing it may be marked (M) in ink; if a root should be extracted, mark it (X) in pencil; if there are cavities or carious spots, outline them in pencil upon the diagram in the exact situation and approximately as they will appear when filled. If a pulp is to be devitalized and the canal filled, a line drawn down the axis of the root leading to the cavity will indicate this. If an alveolar abscess is present, a similar line, but with a small circle at the apex, will answer the purpose. If any artificial substitutes are required they may be noted in their proper places. If teeth require separating before operating upon them, this may

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be shown by drawing a line ( / ) where the wedge is to go. It is also well to estimate the time likely to be required for each operation and jot it down underneath. By this means you are enabled, when arranging further appointments, to determine just what work you may do and the probable amount of time that will be required in its accomplishment. This method becomes one of the greatest of aids in planning a day's work when a practice is conducted on the time principle and by appointment. When the patient arrives some days or weeks hence a glance at the chart will show at once what is to be done, and no time need be lost in getting about it. Remember that time is our greatest asset, and anything that enables it to be utilised to the best advantage is well worth while.

After an operation has been performed it should be permanently recorded upon the chart. Many ways have been devised for doing this, some of them fairly good. A system of marks in order to be of real practical value should show clearly and at a glance just what has been done and where. More than this, the marks should so outline the shape of the fillings, etc., as to make it possible to identify the work beyond a reasonable doubt. It sometimes happens that redress is demanded for a faulty operation from one who did not perform it; such a case may be quickly settled, however, if the operator has adopted the plan of keeping accurate records with each operation clearly outlined. Again, it may be that a patient, finding it inconvenient to reach his regular dentist, will call upon another to repair or replace an injured filling, etc.; under such conditions the outlines would undoubtedly be changed and will attract the attention of the regular operator at once if the chart is being closely followed when making a subsequent examination.

A system of marks which has been found to answer the purpose very well follows rather closely the ones that were suggested for use in making examinations, only that they are made with coloured inks instead of a pencil. The plan would be about as follows: The missing teeth were, of course, marked with an (M) in ink at the time of making the examination; roots which are extracted are marked (X) in ink; amalgam fillings are carefully outlined and filled in with black ink; gold fillings are outlined and filled in with red ink; porcelain fillings are denoted by merely outlining them with red ink, while gutta-percha or cement fillings may

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be shown by outlining them with black ink. Crowns may be shown by initialing them in red ink as: Gold crown (G. C.); Davis crown (D. C.); Logan crown (L. C.); in bridge work the abutments and dummies may be initialed in a similar manner. The filling of root-canals or the treatment of alveolar abscesses may be indicated by the line, or line and circle, following down the axis of the root and connecting with the cavity through which the dressing was made, as was suggested in the scheme given for making examinations. As each operation is recorded a short marginal line leading to it is made and a number attached, the first being numbered 1, and so on. The reason for this will be given when considering the entries on the ledger side of the case card.

The making of the permanent record immediately following the end of each sitting and in the presence of the patient will at first, no doubt, lead to questioning on his part. The few minutes required to explain the plan and the reasons therefore will be found to be well spent: for any patient is more than likely to be impressed with the idea that such attention to detail would indicate thoroughness as a habit and also that, in case trouble should occur, the operator, by means of such records, would be able to determine and treat the cause of it without difficulty. Little things certainly count very largely for or against, and patients have a way of noticing them far more than we often realise.

The operations having been recorded and numbered consecutively, the reverse or ledger side of the case card is to be made out. A card that is ruled with three columns is the most practical, as it permits of the date being entered without loss of room when payments are made subsequent to the operations.

Making the ledger entry direct and at once simplifies the record or so-called "book" keeping very much, for it does away with the necessity of making detailed entries in a day-book, which would have to be transferred to the ledger at another time.

In making the ledger entries it is not necessary that each detail be written out minutely in order that it may be acceptable as legal evidence; but it is necessity, however, that the entries be made in such a way as to be clearly understood, not only at the time they are made, but at any time there-

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after. A plan of entry that fulfils these requirements, and with but a slight expenditure of time and space, is to enter the numbers that have been attached to each operation as it was recorded on the diagrams. For instance, on a given date the teeth were scaled and a gold filling and two amalgam fillings inserted; these were numbered 1, 2 and 3, respectively. These numbers are entered on the ledger, after the date and followed by the amount of time involved and the charge for the same, at so much per hour. By this means, should the question arise at any time, it can be said definitely just what services were rendered during any particular time for which a charge has been made.

This plan will also serve as a "cross entry," for should it be desirable to determine just when a certain operation was performed, it may be learned by noting its number on the diagram and then tracing back through the ledger entries until the number is found, together with the date of its entry. This quickly settles all dispute as to the length of time a filling, crown or other operation has been serving its purpose.

One drawback to all card methods, where the card is of a convenient size to use on the operating table for reference, is that the ledger space is so limited. Perhaps some day someone will devise a scheme whereby the diagram may be printed on the outside of some sort of envelope or pocket in which there will be room for one or more ledger ruled cards. This would make it possible to take out and file away the "dead wood" and not have to handle it over and over. At present when one card is filled about all that can be done is to make out another. The time involved is more of an item to be considered than the cost of the cards in such cases.

The filing of the case cards in sections, by means of coloured index cards, is a plan that has many advantages. In a section marked "unfinished" should be filed the records of all cases that are under treatment, together with the records of cases that have been finished but for which a settlement has not been made in full. This will greatly facilitate the sending of statements at the proper time as only live accounts will have to be looked over. When making examinations it frequently happens that more work is found than the patient wishes to arrange for at that particular time; in such cases, when the work the patient desired is finished and paid for, the record is filed in a section marked "finished."

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This places before you the cards of a number of people that you know are still in need of further dental services. This arrangement will be of considerable value if "reminder" and "follow up" cards are used. In the third section, marked "completed," may be filed all other records, there to remain undisturbed until a subsequent visit of the patient.

A practice conducted rightly should show a steady growth and with the increasing demand for time, one is justified in raising the fee per hour. The question of just how this increase is to be adjusted is for the individual practitioner to decide.

There are a number of ways of doing it—one is to set a certain time, after which the increased fee is charged all patients, old and new alike; another is to have the increased fee apply to new patients; that is those coming after a given date.

If the latter method is adopted it will be found after a time that patients are being charged different rates per hour. This condition is more than likely to exist in any practice although it is best to have the divergence as slight as possible. The question is, however, how to keep track of things so that a patient or members of a family shall always be charged a uniform fee. This may be easily done by placing at the head of the debit column in Roman figures the amount of the fee to be charged per hour. For instance, at the time the patient first seeks your services your fee is five dollars per hour; in that case a (V) is placed at the head of the column. This remains the fee per hour to that patient as long as you feel that you can afford to work for him at that figure. Later, however, the growth of the practice and demand for time warrant an increased fee even from old and faithful patients; in that case, it is made to read (VI) or (VII) etc., per hour. A glance at the chart will then show at once just what rate is being charged any individual patient.

Because a practice is conducted on the time principle it does not signify that a set fee per hour is dogmatically charged every one; the fee per hour may be anything from a "thank you" up to as much as you may think you can get and all during the same day if you like, but the amount of the fees is governed by the amount of time involved in the operations. The system is elastic enough to fit any case and the time principle will apply to all.—*Dental Brief.*

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# THE RELATIVE MERITS OF VULCANITE AND ALUMINUM AS A BASE FOR ARTIFICIAL DENTURES.

By F. W. Slabaugh, D.D.S., Omaha, Neb.

Read before the Nebraska State Dental Society.

I will take into consideration only aluminum as a base for upper dentures and its advantages over vulcanite. I do not wish to be understood as urging the use of aluminum for this work to the exclusion of all other metals, but I speak of it principally because owing to its being an inexpensive metal that has many good qualities I consider it as having the widest field of usefulness to the average practitioner.

The progress made in dentistry during the last twenty-five years has been very remarkable. In nearly every branch of our profession we have advanced with rapid strides not only in our methods but also in our appliances. In no branch of it has there been so little advancement as in the branch of Prosthesis, which pertains to the construction of artificial dentures. Half a century ago the prosthetic dentist confined himself largely to the construction of dentures upon gold bases. Then came the introduction of vulcanite with its blessings and its evils. It gave the profession a short cut to a questionable end. The majority of the profession dropped to the rubber standard and remained there, looking upon their plate work as a very trivial matter, and not giving it the special attention that we are inclined to give other parts of our daily work. Why this condition?—We cannot afford to allow this work to remain upon the low plane to which it has been forced. Instead of its being one of the least remunerative parts of our practice it can and should be raised again and a demand created for a better and higher class of workmanship, and in so doing benefit our patients and ourselves. There is a vast difference between a denture that merely gives satisfaction, and one that is, from a truly scientific standpoint, a success.

During the past year there seems to have been a pretty general agitation among the members of our profession in regard to the general use of some material that would be more compatible to the tissues of the mouth than vulcanite, and out of the depths to which vulcanite has placed prosthetic

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dentistry a light begins to shine. The source of this light seems to be largely from aluminum or alloys, with aluminum as a base. We frequently hear practitioners say that their patients don't want anything but vulcanite plates. That statement is no doubt true and doesn't surprise us in the least. Of course they don't want anything else, because 90 per cent. of the patients don't know that there is anything else to be had. They never will want anything but vulcanite unless we tell them that there is something better for them. We and we alone are responsible for the opinions held by our patients upon such matters. Our practice is largely what we make it. The man that talks bridge-work first, last and all the time usually does bridge-work; the man that advises gold fillings in molars usually puts in gold, while the more timid amalgam brother ordinarily puts in amalgam, and so it is that we shape our own destinies.

Vulcanite has its place no one can deny, and not for one moment would I think of belittling it, but like every other material it has its place and should be kept there. I believe that the principal field of usefulness for vulcanite is in the construction of temporary and partial dentures, and the attachment of teeth to metal bases. It should not be placed in contact with the mouth in permanent dentures, especially is this true of full uppers.

Vulcanite is a vegetable compound of very limited conducting power, and in this lack of conductivity lies its worst objection. In fully 90 per cent. of mouths where a vulcanite denture has been worn for any length of time you will observe that a great change has taken place. The membrane is in a hyper-aemic condition and resorption of the process has taken place to such an extent as to produce a soft and flabby condition of the gums and a consequent lowering of vitality. This resorption goes on in increasing speed as the denture becomes loose and rocks from side to side under the stress of mastication. The only portion not susceptible to this condition is the hard bony centre, which is the only portion of the upper jaw that never changes. Why this pathological condition? We may find several reasons, but the most important one is that the vulcanite is a non-conductor of thermal changes, limited radiation has taken place and an undue amount of heat has been retained under the plate. The rough low density of surface of the vulcanite coming in contact with the delicate



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tissues of the mouth is also a potent factor in causing this inflamed condition. This roughness affords every opportunity for the collection of food particles and the development of bacteria. Lastly, I would mention the condition known as "rubber sore mouth," supposed to be caused by poisonous ingredients of the rubber; namely vermilion or mercuric sulphide. I mention this lastly because my own observation would hardly justify me in urging this as a strong objection. It seems hardly probable that this vulcanite compound could be decomposed chemically and be converted into an active salt of mercury by merely coming in contact with saliva; however, some of our most eminent practitioners have been convinced and are firm in the belief that such is the case. I also mention this possible objection last because if there is mercurial poisoning from the use of vermilion coloured rubbers it could be remedied by the substitution of some of the dark rubbers which do not contain vermilion as a colouring material. My first and principal objection, "its non-conductivity," remains unalterable.

In aluminum we have an excellent conductor of heat, it being about the same as silver, (which we know is the standard), a metal that is exceptionally light, strong and inexpensive. Until a very few years ago there was a very well grounded objection to the use of aluminum owing to the possibility of disintegration by chemical action of the oral secretions, the metal being contaminated with impurities which rendered it susceptible to chemical or possibly electrical action. Owing to more modern methods of production a nearly pure metal is produced in which the objectionable features are eliminated. With the improved methods of production we also find a material reduction in price, so that the expense of the metal can no longer be used as an argument against it. Owing to the low specific gravity of the metal in its pure state it cannot be considered an ideal material for casting; however, with the addition of a small amount of silver it can be cast with ease.

I do not consider the casting of any metal directly upon the teeth as a practical method because of the increased liability of breaking the porcelain under the stress of mastication. Instead of setting the teeth upon a hard unyielding metal base I would prefer a blank to be cast separately and the teeth attached with vulcanite.

Sheet aluminum of about 18 or 20 ga. makes an excellent

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material and with the aid of the patent swagers can be adapted very quickly and easily.

To sum up the merits of aluminum I would place its concouducting power and smooth dense surface as its chief advantages. Mouths in which have been worn well adapted aluminum plates show an almost normal condition with the gums pink and firm. The irritating effect of the non-conducting vulcanite is rarely to be seen. If there is an advantage in the lightness of an upper denture we have a strong feature in aliminum, with a sp. gr. of about 2½. It is strong and can be used of such a thickness that will give great comfort to the wearer. With the improved methods of to-day which simplify the manipulation of metals I expect to see by the aid of aluminum a great and beneficial change brought about.—*Dentists' Magazine.*

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## THE RESPONSIBILITIES OF OPERATING SURGEONS AND ANÆSTHETISTS.

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We publish in another column an interesting communication from the pen of Dr. Dudley Buxton dealing with the medical point of view as to the degree of responsibility toward the patient that exists between the operating surgeon and the anæsthetist. Our able contemporary the *Law Journal*, in the issue of Dec. 14th, 1907, published a short editorial article dealing with the legal aspect of this most important question. The matter has been ventilated in our columns in connexion with inquests held upon patients dying under anæsthetics, but it is not a little surprising that a subject so important to the profession and to the public at large should have received so little attention in works dealing with anæsthetics and published in the United Kingdom. With one exception no reference is made to it in them and even the leading authorities upon the medico-legal side of our profession dismiss the problem involved with cursory paragraphs.

The article in the *Law Journal* proves that foresenic and medical minds fail to look at the questions which lie in the borderland between physic and law from the same standpoint. We are told, for example, that the evidence given at an inquest before the coroner for Southwark disclosed:

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"(1) that it is by no means an universal practice in hospitals to have anæsthetics administered by a regularly trained anæsthetist and that on occasion they are administered by any member of the hospital staff and even by newly-fledged practitioners, whose knowledge of drugs is by no means equal to that of an ordinary chemist; (2) that the apportionment of the responsibility for the anæsthetics between the operator and the anæsthetist is not clearly settled." With regard to the first point, we presume that the writer is not aware that even "newly-fledged" practitioners are instructed not only in the properties of anæsthetics but in the methods of their use. To compare them in this regard to ordinary druggists is to admit ignorance of the matter at issue. It must be conceded, we fear, that although medical men in England are obliged now to be instructed in the production of anæsthesia and to be "signed up" for attendance at a certain number of cases when anæsthetics are used before they can be admitted for their final examination, yet for the character of the instruction and the efficiency of the student the public have to accept the guarantee of the staff anæsthetist, since no examination is imposed by the examining boards. Occasionally questions are asked but no practical work is required. At present the anæsthetist who is attached to the hospital is practically the only safeguard between the public and the "new-fledged" practitioner. When we pass to the second point—viz., the apportionment of responsibility between the operator and the anæsthetist—a more complex problem is presented to us. We have always contended that no operator can accept the responsibility for the conduct of the anæsthesia; he must either give divided attention to his own work or to that of another man, and in either case he must fail to accomplish the best that is possible for his patient. We are excluding purposely those occasions, which are probably few enough, in which through an emergency the anæsthetic must be given by a person inexperienced in the matter; in such an instance the operator has to do the best he can, but we contend that such emergencies should never be the result of the operator's want of forethought if he wishes to escape liability for any accident. Admitting, then, that in hospital or private practice the necessity for the anæsthesia arises it will in most cases devolve upon the surgeon to call to his aid some person to give the chloroform or ether. In hospital he will

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follow the routine of the institution and obtain the help of an anæsthetist who is usually a member of the staff, and whose duty it is to attend at specified times. In this case the responsibility for the conduct of the anæsthesia will rest upon this officer. It is probable that whenever a hospital staff or board of governors elect such an officer they do so with the understanding that he will accept this responsibility and be competent to do so without any supervision by the operator, since the latter presumably does not know more than his colleague in the field of the latter's special study. When, however, this officer is absent—and we gather from the reports of inquests which we have published at many or at all hospitals a large number of anæsthetics must be given by persons other than the staff anæsthetists—the operator accepts the responsibility of allowing some person of more or less skill to undertake the anæsthetising of his patient. This is a legitimate position but we connot agree with the contention that if his choice falls upon someone whom he has reason to believe to be inexperienced he, the operator, can supplement the inefficiency of the anæsthetist by any supervision which he may exercise while he is engaged in operating. We believe it is held by some coroners that if a fatality arises in such circumstances and it can be shown that the death was the result of the inexpertness or carelessness in the administration of the anæsthetic the responsibility would be laid upon the operator. We notice that speaking at a recent inquest the coroner for Southwark stated that the surgeon was legally responsible for the anæsthesia as well as the operation. He does not, however, give any authority for this view and we are not aware that any decision upon the point has been arrived at in the law courts, except in cases in which the surgeon has himself given the anæsthetic and has performed the operation. If the law is as asserted it seems time that such an anomalous situation should be terminated. In private practice the operator who selects a person of small experience or permits the selection of such an anæsthetist in a grave case would accept a very serious responsibility, but in hospital practice many things have to be considered. It is almost inconceivable that any well-ordered hospital should not have proper provision made for the giving of anæsthetics in case of emergencies. Many have resident anæsthetists, others have resident medical officers who are skilled in giving anæsthetics, and such would be available at all times. When no competent person is ob-

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tainable it seems to us that the surgeon incurs a very grave responsibility in pursuing an operation without competent help and would be wise if he insisted upon the remodelling of the department of anæsthetics in his hospital.

The public, as well as the medical profession, regard the duties of an anæsthetist in a very different light from that which obtained a few years back. Then the chloroformist was "the assistant;" he received the odd shillings from the surgeon's fee, or even less, and was a house surgoon or some junior who looked to his teacher or friendly helper for a few guineas until practice came his way. To-day the anæsthetist devotes many years to hospital work and pursues his own branch as assiduously as does the physician or the surgeon, and is usually a man holding degrees equivalent to theirs. This change of status has been, however, only gradual and has been the work of comparatively the last few years. It is this fact that has brought about much confusion as regards this question of responsibility. Patients even now often regard the choice of the anæsthetist as being one of the duties of the surgeon and so fasten this responsibily rather unfairly upon him. There can be no doubt, we think, that the ideal is attained when the anæsthetist is genuinely a competent and scientific exponent of his own branch as is the physician or surgeon in his. Knowledge in the administration of anæsthetics involves more than a mere manipulative skill and presupposes a painstaking apprenticeship. Responsibility in such cases can be relegated upon the right shoulders and the position, which we submit is untenable, must be relinquished that a surgeon can make himself responsible for the choice of agents, of methods and the conduct of anæsthesia when undertaken by another man. It follows upon this that those anæsthetists who make a speciality of their branch of the profession and who devote many hours a week to hospital work should be granted the same status as other members of a hospital staff; they should have their position of responsibility brought clearly before the public. If they are to be held responsible for the life of the patient, and we submit that such should be the case they should reap both pecuniary and social reward for their services. Many will agree with a distinguished anæsthetist who has urged the importance of all staff anæsthetists possessing degrees as graduates in medicine or surgery or equivalent diplomas from the Royal Colleges. Such officers should undertake not only lectures but thorough

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clinical instruction at the schools to which they are attached. In this way students would learn to appreciate fully the gravity of their future work when called upon to give an anæsthetic and would learn also that most difficult of all lessons, to master their own limitations. It is surely severe enough a strain upon the modern surgeon to have to operate upon the complex cases which daily fall to his lot without being obliged to superintend the heedless or timid anæsthetist to whom are occasionally relegated duties for which lack of previous training or limited experience renders him unfit—*Lancet.*

# Dental News.

## LIVERPOOL DENTAL HOSPITAL.

THE forty-seventh annual general meeting of the subscribers and friends of the Liverpool Dental Hospital was held at the Town Hall, the Lord Mayor (Dr. Caton) presiding. There were present: Professor Paterson, Messrs. W. H. Gilmour, J. A. Woods, H. W. P. Bennette, R. W. Capon, A. Drake, W. L. Jackson (hon. secretary) Dr. Bailey, Dr. Baker Young, and Dr. Waite.

The annual report showed that the total number of patients admitted since the formation of the hospital amounted to 653,251. During the past year the number of patients treated at the hospital had been 25,727, and of operations 25,661, of which 12,174 were conservation cases, an increase of 1,158 in operations of a conservative character, as compared with the previous year. The apparent decrease in the total number of operations was partly occasioned by extractions being now counted per case instead of for each tooth extracted. The dental appliance fund continued to work satisfactorily, and a number of grants in aid of necessitous patients had been made during the year. The committee had to announce that, in response to their appeal for £10,000 to enable them to build and equip a modern hospital on another site, the sum of upwards of £6,000 had been subscribed or promised, and a further sum of £1,000 had been promised conditionally; and the committee trust that, with the record which the hospital had in the good work of relieving the poor and suffering, they will not have long

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to wait for the balance of £3,000 to be made up. In the meantime a committee had been appointed to acquire a site, and it was hoped to commence building operations at an early date. In this work they had the cordial co-operation of the authorities of the University and Royal Infirmary. The committee recorded with thanks annual subscriptions to the hospital amounting to £220 9s., and donations amounting to £61 0s. 3d. It was noteworthy that the voluntary contributions of the patients for the year amounted to £111, which was an increase of £26 on the previous year. The thanks of the committee were due to the committee of the Hospital Saturday and Sunday Fund for their contribution of £84 15s. 7d., which was an increase over last year; and to the medical, surgical, and dental staff for their valuable services during the past year.

Professor Paterson, the hon. treasurer, submitted the balance-sheet, which showed that the year closed with a deficit of £45 12s. 7d., as compared with £16 3s. 5d. at the end of the previous year. With regard to the new hospital he thought they would be enabled to announce shortly that the committee had succeeded in acquiring a site in close vicinity to the University and the Royal Infirmary. In the old hospital they were going on in a way which was detrimental to the work done and unfortunate to the sufferers who had to be attended to. The work of the hospital would be hampered until a new building was acquired. The committee were desirous of erecting the building as cheaply as possible, but they would provide it with the most modern and scientific equipment that could be found.

The Lord Mayor moved the adoption of the report and accounts and said he believed there was hardly any hospital in Liverpool that was doing more valuable work than the Dental Hospital. He looked upon the work as largely preventive. His experience had taught him that a large amount of disease, weakness and constitutional feebleness, chronic inability for work and inefficiency generally was due to the neglect of the arrangement and to decayed teeth which had not been attended to, with the failure of digestion and breakdown of body which followed. He thought there was hardly anything they could do to the poor working classes to prevent illness and suffering which was more important than early and regular attendance to the teeth. He believed, other things being equal, the man who looked after his teeth had a chance

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of retaining his health and vigour and living to a fair age immensely greater than that of the man who neglected his teeth. The only way in which the labouring people of Liverpool would have this important want supplied was through the agency of the Dental Hospital. The work they did was very great and very important, and it was done at a remarkably small outlay. He himself had sent many patients to the hospital, and every one was delighted with the treatment received there, and the benefit to their health was marvellous. He felt it extremely important that the staff, who devoted so much of their time in such a philanthropic manner to their work, should be placed under favourable conditions, and should have the building and appliances that were necessary for the carrying on of their work. Another important side of the work was the training of students, and they would hope when the new hospital was acquired that the Dental School in Liverpool would have much greater opportunities. He thought that the provision of qualified and well-trained dentists for the whole country was a most important matter. He remembered when the dental profession was filled by many most unqualified men, and the saving of the health of the community was of such importance that properly trained men for this work were necessary. It was the duty of the city to supply their Dental School with with an efficient hospital, and he hoped their wishes in this respect would soon be realised.

Mr. W. H. Gilmour seconded in the unavoidable absence of the chairman, Mr. L. S. Cohen. With regard to the School, he said the more successful it was the greater would be the number of conservative cases. The number of students registered was increasing, and he was sure that with a new building properly equipped their School would increase, and with it the good work of the charity.

The resolution was approved.

Mr. J. A. Woods proposed a vote of thanks to the president and officers for their services during the year.

Mr. H. W. P. Bennette seconded, and the motion was carried.

On the motion of Professor Paterson, seconded by Mr. R. M. Capon, the consulting physician, the consulting surgeon, and the dental staff were thanked for their services.

The officers and staff were re-elected, and the proceedings closed with a vote of thanks to the Lord Mayor.

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## DENTISTRY AS A FEMININE PROFESSION.

The *Schoolmaster* says :—

"Amongst the many professions that have opened their doors to women of late years, one of the very few that she has not entered is dentistry. In an interview with the secretary of the National Dental Hospital, the latter stated that it is now some twelve years ago since the hospital authorities decided to admit women students. Since that time, however, only six English ladies have graduated and were now practising in England. Greater advantage of the privilege had been taken by students from the Continent, many of whom had passed successfully through the hospital, and had then acquired practices abroad. Some of these, continued the secretary, confined themselves to the women's and the children's branches of the profession, but most of them had general practices. From a lucrative point of view, it is rather surprising that there are not more lady dentists. The importance of caring for the teeth is each year becoming more widely recognised, and with it, of course, comes a greater demand for dentists. On the other hand, most women have a natural aversion to inflicting physical suffering on a fellow being, although the more strong-minded among them may rightly argue that drawing a tooth is only a 'means to an end.'"

## TO EXAMINE CHILDREN'S TEETH.

The dentists of Halifax, Nova Scotia, have arranged to examine the teeth of the public school children.

The dental record is to be kept in possession of the dentist until he sends it to the dental secretary. The parents' dental notice with valuable printed instructions on the back is to be sent to the parents by the teacher, and the latter is to see to it as far as possible that the card reaches them.

The regulations drawn up by the dentists and agreed to are as follows and show that the pupils have nothing to fear from pain or dental instruments, the School Board having carefully looked to it that the pupils are not to be put to any pain :

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The examination shall be conducted with the greatest care as to antisepsis.

The materials to be used shall be Lysol or Creolin. One teaspoonful in one pint of water.

The only instruments used shall be mouth mirrors, of which there should be at least three, to be used alternately, those not in use to remain in the antiseptic solution.

No probes, explorers, or other instruments shall be used in the mouth.

Two flat granite iron or glass dishes, one for the antiseptic, the other for the rinsing of the instruments or, where no wash basin is at hand, for washing the hands.

In examining the cavities in the teeth an estimate will be sufficient.

In no case shall the examiner ask the name of the family dentist of any pupil nor criticise any operations. The object is simply to record conditions as they are found.

Examiners may visit any department allotted to them at their convenience without notice. They are expected to visit as many as possible before June 28th.

The teacher will act as secretary to the examiner.

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## DENTAL CURIOSITIES.

THE methods adopted by some poachers on the dental profession—are many and curious, and the other day our Blackburn correspondent came across some remarkable examples which had occurred in the district. The most curious productions appeared in bold advertisement of the daily and weekly press and the obvious intention, in most cases, was to mislead and gull the patronising public. For instance, one of the "trade"—we say the word advisedly—placed the magic words, "D.M.O." after his name, though what intimation he intended to convey one can hardly tell unless it be "Dental Mechanical Operator"—certainly no recommendation to an enlightened public. Another of this class waxed poetical, to call attention to his merits, for he observed:—"Are you wearing artificial teeth that are loose and sometimes fall: If so, we say, bring them to-day, we'll put them right—that's all."

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Still another case is furnished where the profession is made into a trade by an East Lancashire firm announcing that during a certain period they would allow 20 per cent. off all list prices ! An even worse case is reported in which one company, in some instances, request blissful customers to pen their signature to a fancy worded document the real effect of which was that the artificial teeth manufacturer would not hold himself responsible for any accident or misadventure. A West Lancashire pharmacist some time ago had a notice prominently displayed in the window of his establishment which read :—" Teeth extracted whilst you wait." And this in the twentieth century.

## EXETER DENTAL HOSPITAL.

### Resignation of the Hon. Secretary.

The quarterly meeting of the Devon and Exeter Dental Hospital was held recently. The President (Mr. Harry Hems) was in the chair. Amongst those also present were the Right Worshipful the Mayor (Ald. Gadd, J.P.). From the treasurer's report, it was found that when the outstanding accounts were paid the funds of the Hospital would be something to the bad ! It was agreed to write a letter of sincere regret to Mr. J. T. Browne-Mason, who has left the city, and hence, of necessity, has been obliged to resign his position of senior dental surgeon to the Institution, and to accompany it by a purse of gold, subscribed for mainly by those with whom he has so long been connected at the Hospital. The resignation of the hon. secretary (Mr. Alderman Henry Yeo, J.P.), was also read by the President, and was received with universal expressions of regret. Mr. Yeo has been the earnest and hardworking secretary for some fifteen years, during the whole of which time he has evinced the greatest possible interest in and worked hard for the advancement of the Charity. It was with deep concern those present learned that the present state of his health rendered his resignation imperative. As a small testimony of the Board's appreciation, it was unanimously decided to elect him upon the Board of Management, and further to make him an

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honorary life member. A letter was read during the meeting from Mr. Mathews, as solicitor to the estate, stating that the late Mrs. Yarde had left a legacy of £100 to the Dental Hospital.

## THE EDINBURGH STUDENTS' ANNUAL DINNER.

The 24th Annual Dinner of the Edinburgh Dental Students' Society was held in the Royal Hotel, Princes Street, on Friday evening, February 21st, when Mr. Scot Skirving, C.M.G., lecturer in Surgery, occupied the chair, and Messrs. T. Davie, L.D.S., R. Stuart Sanderson, L.D.S., and C. O. Wood, L.D.S., acted as croupiers. Dinner was served to about seventy, and amongst the guests present were representatives from the Glasgow Dental Students' Society, and many past students now in practice at a distance.

After the loyal toasts, Dr. Goodall proposed the "Dental Hospital and School" which was replied to, in the unfortunate absence of the Dean, by Mr. J. S. Amoore, L.D.S.

The "Dental Students' Society" was given from the chair, and in doing so Mr. Scot Skirving eulogised the enthusiastic work of the members, especially emphasising the conduct, and success of the magazine "The Edinburgh Dental Student," which had now been in existence since January 1900.

The toasts were pleasantly interspersed with story, song, and instrumental solos, a special debt being due to Mr. Logan, L.D.S., who acted as accompanist; and to Mr. T. Dilks Page for his mystifying card manipulation.

The menu card while not so humourously portrayed as in the past was an artistic production in black and white, and was the work of N. T. R. Tibbits, L.D.S.

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# Legal.

## COMMISSION ON FALSE TEETH.

The question of commission upon false teeth was the basis of a case heard at Seaham Harbour County Court, recently, wherein William Henry Iley, chemist, sued Arthur J. A. Ackhurst, also a chemist, for the said commission.

It was explained by plaintiff's legal representative that Iley was at one time an assistant to the defendant, who had a dentist's shop at Haswell, and it was one of the terms of agreement that Iley should have a commission of five per cent. on all orders which came from the Thornley shop which Iley managed.

From November, 1905, to the time Iley left, a large number of people called at the Thornley shop, and from the time that these orders had come Mr. Iley had made numerous applications to Ackhurst for an account, but this he had not received until a summons had been issued, and the account sent was not satisfactory to Mr. Iley, who had reason to believe that there were many cases not mentioned in it. Leave was sought for the defendant's books to be submitted to the registrar.

After hearing evidence, Judge O'Connor said there was a "prima facia" case, and it had better be referred to the registrar, all defendant's books to be produced. Both sides agreed to be satisfied that the registrar should have power to enter judgment according to his own finding.

## A REGISTRAR'S STRICTURES.

In a recent issue of this Journal we published under the above heading the strictures of Mr. Registrar Withers, of the Blackburn County Court, on an unregistered man named Wm. Henry Gregg, of Mill Hill, Blackburn, who unsuccessfully sued a customer named Mrs. Pratley for the price of a set of upper teeth which the Registrar agreed were altogether a misfit.

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There was a sequel to the case at the local County Court, on Monday, July 17th, when Mr. Gregg appeared before Judge Hans Hamilton to show cause why an order should not be made against him to pay £2 17s. 6d., costs incurred by Mrs. Pratley. For the woman, Mr. Campbell explained that the parties were litigants in a recent action when Mrs. Pratley won her case. Gregg had offered to pay 3s. per month but he asked that a larger order be made for the woman had had to pay money out of her own pocket. He understood Gregg was an unregistered dentist.

The Judge: Is that so?

Mr. Gregg: No sir, I made no such profession. I am a canvasser for artificial teeth.

The Registrar: It is the old story.

Mr. Campell: But at the recent action you described yourself as an artificial teeth manufacturer!

Mr. Gregg (who is a former member of the Pharmaceutical Society for Ireland): So I did.

The Judge (sternly): and why did you do that?

Mr. Gregg: On the instruction of my solicitor. He said that was the description applied to me. I was with Mr. Lancaster, also a manufacturer of artificial teeth, who has since left town,

The Judge: I cannot think that any solicitor would do such a thing as that.

An order for the payment of 3s. per month was made.

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GUTTA PERCHA FOR ROOT FILLING AND SETTING CROWNS AND BRIDGES.—The septic contents of the tubuli of a diseased root must be brought into aseptic condition, but not alone that; the root must be so completely disinfected that when its point is closed and the crown or bridge set infection cannot supervene. In such a case gutta percha is not admissible. To remain in a healthy condition such a root must be not only hermetically sealed at the foramen, but it must have its pivot so completely sealed that there can be no ingress of corrupting micro-organisms. In a healthy root, where a crown has been set with a thin layer of gutta percha, a slight leakage is a factor of little moment; but in a root which has been saved, as by fire, not only the danger of fracture through swelling of the material may exist, for moisture

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causes in time all gutta percha to swell, but it is also impossible to keep any root free from the ingress of moisture except with cement, and also in desperate cases, the strength imparted by cement is a factor of great importance.—*N. S. Jenkins, Dresden, Germany.*

# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

No notice taken of Anonymous Communications. Name and address must always be given, although not necessarily for publication.

We cannot undertake to return communications unless the necessary postage stamps are forwarded.

It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.

All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.

This Journal will be supplied direct from the office on PREPAYMENT of Subscriptions as under :—

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British Journal of Dental Science

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# PRESIDENTIAL ADDRESS.*

By Mr. J. Howard Mummery.

Gentlemen,—My first duty, on taking the Chair at the opening meeting of our Section of the Royal Society of Medicine, is to thank you for the great honour you have done me in electing me your President for the second time, and especially at such an important epoch in our career.

It is a curious circumstance that our amalgamation with the Royal Society of Medicine should have taken place in the same year in which we have celebrated the fiftieth anniversary of the foundation of the Odontological Society. I think we can look back on fifty years of sound and useful work, years in which the speciality to which we owe our allegiance has made advances that the founders of the Society could scarcely have anticipated in that period, and I think that this union with the other medical Societies of London is a fitting climax to this fifty years of work and preparation.

The co-operation of Scientific Societies which is now inaugurated is, I venture to think, a most excellent and wide-

* Proceedings of the Royal Society of Medicine, Odontological Section



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spirited movement. There has been in all departments of knowledge for many years past too great a tendency to specialisation and subdivision, too much exclusiveness, and in this excellent departure we look forward to a great advance in usefulness and believe that much benefit will accrue to all, in the interchange of thought and opinion that must accompany it. In our own Section we shall welcome criticism and no doubt profit largely by this transmigration, and we venture to think that the subjects under discussion in our meetings will bring those who practise other departments of the healing art more into touch with our speciality, and show them perhaps more clearly than they have hitherto appreciated how very intimately the health of the body generally is dependent upon the maintenance of a healthy condition of the mouth and teeth. As you all know, there have been great difficulties to be overcome in bringing together all these different Societies and in dealing with their various requisitions, and we owe a great debt of gratitude to the leaders in this movement for the persevering and patient way in which they have met all these difficulties and satisfied the most varied requirements of the different Societies, and have enabled us to start with a Society formed of thirteen sections representing every department of medicine and surgery. Those of us who have been on the Constitution Committee of the new Society are able better to appreciate the immense amount of work carried through by the honorary officers in the face of serious opposition and many difficulties. We hope that their efforts will be crowned with the full amount of success which they deserve, and that the Royal Society of Medicine has a long and successful career before it.

On November 10th, 1856, the Odontological Society was formed, being constituted almost simultaneously with the

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presentation of a memorial to the Royal College of Surgeons for the institution of an examination by that body for a dental diploma. We know that at the time a great deal of feeling was manifested in the profession, and there was much criticism of the mode by which the constitution of the Odontological Society had been arrived at. Many considered, with some reason, that the scheme should have been submitted to a wider circle, and not have been left to the private decision of a few leading men in the profession, but by the light of later years we know that these leaders were far-seeing and felt that the time had arrived when some great movement should be initiated for the elevation of the dental profession, and it also has to be remembered that in those early days when there was little professional feeling among dentists—when it was every one for himself, and the majority of those in practice feared what reforms might bring to them —an appeal to the whole profession might have resulted in signal failure. But the dismal prophecies as to the future of the Odontological Society in which many freely indulged were not fulfilled—the organised opposition of the College of Dentists at last gave way to wiser counsels.

The Odontological Society was soon firmly established, and, having gained an influence hardly to have been expected in so short a time, the amalgamation with the College of Dentists took place on May 4th, 1863. Would that many of these brave men, who amidst all manner of discouragement and even abuse were staunch to their convictions, had lived to be present here to-night to see the result of their labours in the present position of the Society. The history of the Odontological Society is the history of the emancipation of our profession, and to the efforts of its members are due our recognition by the Royal College of Surgeons of England and the founding of the Dental Hospital of London

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and its Dental School. We are happy to-night to honour the men who fought so bravely for us in the past. Let us, like the Japanese, attribute all our victories to the virtues of our ancestors.

In those fifty years that have passed since the foundation of the Odontological Society what great changes have taken place, both in matters immediately connected with our speciality and in the wider field of general surgery and medicine! This period has seen a new science, Bacteriology, spring into being, which has thrown new light upon the diseases we are especially called upon to treat, and which in its very earliest days inspired Lord Lister (availing himself of the wonderful researches of the great Pasteur) to apply its teachings to the practical treatment of wounds. So universal is the adoption of this great reform in practice, that it is hard for us to realise what a boon to humanity this great discovery has proved. To those among us who, like myself, remember hospital practice in the sixties, it appeals with especial force. In my student days, however, I saw this great change take place. I saw suffering and death, supposed to be inevitable, proved to be preventable by this comparatively simple means, hospital gangrene and pyæmia banished, and compound fractures virtually turned to simple ones through the recognition by this master mind of the true cause of the infection of wounds. It may be interesting to recall the circumstances under which this great reform was brought about.

In 1860 a fine new infirmary was built at Glasgow, fulfilling in most respects the sanitary requirements of a great hospital; the ventilation and sanitary arrangements were considered excellent, but, as Lord Lister says in a lecture on the antiseptic treatment published in 1869, to the great disappointment of all concerned, this noble structure proved

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extremely unhealthy. Pyæmia, erysipelas, and hospital gangrene soon showed themselves, affecting especially the wards of the ground floor, which included the accident ward under Lord Lister's charge. In all cases of open wounds he found the proportion of fatal cases largely increased, especially when these cases exceeded a certain percentage; so bad was the condition on several occasions that the wards had to be closed for some time. The mortality becoming excessive, an investigation was made into the state of the building. "A few inches below the surface of the ground, behind the two lowest male accident wards, was found the uppermost tier of a multitude of coffins, which had been placed there at the time of the cholera epidemic in 1849, the corpses having undergone so little change in the interval that the clothes they had on at the time of their hurried burial were plainly distinguishable." "Yet at the very time when this shocking disclosure was made," says the author, "I was able to state that during the previous nine months, in which the antiseptic system had been in operation in my wards, not a single case of pyæmia, erysipelas, or hospital gangrene had occurred in them, and that, be it remembered, not only in the presence of conditions likely to be pernicious, but at a time when the unhealthiness of other parts of the same building were attracting the serious and active attention of the managers. Supposing it justifiable to institute an experiment on such a subject, it would be hardly possible to devise one more conclusive." The immunity from these diseases continued in the wards under his care during the remaining two-and-a-quarter years in which he remained in Glasgow, although it was also found later that at one end of the hospital the wards abutted upon a churchyard in which the pit burial of paupers was carried out, and around the infirmary, in pits each holding eighty, 5,000 bodies were lying in a state of decomposition.

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I mention these facts to show what an absolute demonstration was given of the enormous value of this great discovery. In spite of this convincing proof, the new system, as is the case with every innovation, met with opposition in many quarters; and one of my earliest student recollections is that of a clinical lecture in which an eminent London surgeon declared that the new method of treatment of wounds had proved in his wards to be a failure. He was, however, soon afterwards convinced that the failure was due to imperfect methods, and became a warm advocate of antiseptic surgery. In our days it has become the only justifiable method of treating wounds, and its effects have been studied in all directions, in the treatment of all conditions of disease, with the greatest benefit to suffering humanity. Lord Lister's prophecy in 1869 has been amply fulfilled, when he said: "The antiseptic treatment is continually attracting more and more attention in various parts of the world, and whether in the form which it has now reached, or in some other and more perfect shape, its universal adoption can only be a question of time. The noble institutions of which our country is justly proud, admirably adapted alike for the treatment of the sick and the instruction of the student, will then be cleared of the only blot that now attaches to them." They *have* been cleansed from this blot, and it is impossible to estimate the number of valuable lives that have been saved since that time by the universal adoption of the antiseptic treatment.

In our own special department important discoveries and new methods have rapidly followed one another, one of the most important of these being the introduction of nitrous oxide gas as an anæsthetic, which we owe to Horace Wells, of Philadelphia, who, reviving the experiments of Sir Humphry Davy, made the employment of this agent a

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practical success. I remember the first administrations in England, when Dr. Colton came from America and demonstrated its employment at the Dental Hospital in Soho Square. He used a tube held in the patient's mouth and brought direct from the gasometer. Even with this crude method of administration, although the blue colour of his patients from the impure gas employed was sufficiently alarming to the onlookers, he completely demonstrated the the safety and efficiency of the new anæsthetic, which, with the valuable improvements in preparation and administration of recent years, has proved such a boon to us and to our patients. With this safe anæsthetic in our hands, it is astonishing that we should still see reported, from time to time, cases of death in the dental chair from the administration of chloroform. Why should we still have to emphasise the fact that it is not justifiable to administer chloroform to any patient in the sitting position? The introduction of the rubber dam and the dental engine, which we owe to our American cousins, has proved an immense boon to us in our daily practice, enabling operations to be more perfectly and rapidly carried out in the mouth.

More recently the introduction of pressure anæsthesia in the treatment of pulps has proved of great value, and local anæsthesia by injection bids fair to take the place of general anæsthesia in many small operations. During the lifetime of the Odontological Society we have lived to see miracles come to pass—the telephone, the phonograph, wireless telegraphy, the Rontgen rays; we do not consider them miracles now, but in former centuries they certainly would have been looked upon as such. Other discoveries quite as wonderful as these are yet in store for future generations, perhaps in the realm of physical science, perhaps in that of physiology. There are many mysteries to be fathomed, many problems to be solved;

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the mind of man has done wonders in the past and has capabilities still undeveloped. Let us say nothing is impossible; we have never reached the goal, but there are always fields still unexplored, countries still unnamed. Science has reached out her scaffolding into the dimness of the past, where she has hung out her lantern to illuminate the darkness still surrounding the dawn of life—she has, taking her stand on the firm foundation of established fact, thrust forward her piers into the dim vista of the future, and foreshadowed discoveries yet to be made by future generations.

So many worlds, so much to do,
So little done, such things to be.

I would like to dwell upon the fact that our Society represents the scientific side of our special branch. It was at its foundation designed to be a scientific society, and has established a fund for the endowment of scientific research. By calling it a scientific society, one does not for one moment attempt to convey that question of practice and detail should be excluded, but that its papers and discussions should be devoted to both abstract scientific questions and to practice founded on a scientific basis; and we always find that the soundest practice, the most successful treatment, is founded on an accurate knowledge of facts. Empiricism, which may be defined as "an undue reliance on mere individual experience," has pitfalls for the unwary into which they frequently are plunged, and which they might have avoided had they taken their way along the firm roadway of knowledge to the sound practical results for which they had been striving.

Although much scientiffc work is undertaken and should be undertaken without any utilitarian object in view, there are many cases where such an object is in no sense derogatory to scientific research, and where most useful results may be obtained by investigations undertaken by scientific

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methods for the express purpose of obtaining some wished-for practical result. As an example of what may be done by a single man basing his practice upon scientific experiment and accurate knowledge, never empirical, never coming to any conclusion until arrived at by careful experiment, I may mention the late Professor Miller, whose recent loss we so deeply deplore. By the death of Professor Miller we have lost one of the noblest ornaments of our profession, one who, during his comparatively short career, has done an amount of work that makes us all feel pigmies beside him. He has earned the admiration and respect of the leading men of science in all countries, and the amount of scientific work he has done and the untiring devotion he gave to research can scarcely be appreciated except by those who knew him intimately. Beside his great work in clearing up the pathology of caries, there is not a department of dental science and practice in which he has not largely advanced our knowledge, and the members of this Society must vividly remember the absorbingly interesting way in which he dealt with many subjects at our meetings. His beautiful preparations are familiar to us all, and they alone represent an amount of work and of originality that is astonishing. Of his personality I am well able to speak, for I have lost in Professor Miller my best and most intimate friend. His personal charm was great; with all the enthusiasm of the man of science, he was a perfect boy in spirit, and took the keenest interest in all games and exercises, in which he invariably excelled. To myself, as well as to all who knew him, his loss is irreparable, and to the profession, both here and abroad, very difficult to estimate. Well may our American brethren be proud of such a man. The many Societies of which he was the life and soul will be as sheep without a shepherd, and it is very difficult to realise that his genial spirit has passed away from

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us. The name of Miller will live as a household word among us as long as our profession endures.

We have to-night taken a bold step; we have finally merged our individuality into that of a greater whole, but it is not a ceasing to be, not a termination of our existence, but a re-incarnation. We have passed from one state of being into another, but we have done so with all the advantages of the memory of our previous state, able to profit by it and improve upon it. The Greek philosopher Empedocles said: "For I have been in bygone times a youth, a maiden, and a flowering shrub, a bird, yea, a fish that swims in silence the deep sea." If re-incarnation is thus progressive, what may not lie before us? The sad part is, we cannot remember our former existences. Think, if one had been a reptile in early Pliocene times and could not now remember it, what opportunities we should have lost. We might have solved the problem of the dentition of the earliest mammal, we may have had a brief and painful opportunity of learning if he was truly triconodont, and settled many a debated point in palæontology, or even have been the missing link himself, and our previous bones still be hidden deep in some unexplored stata of the globe.

The Odontological Society has endeavoured to do its duty in the past; I think we can now hail with great satisfaction its incorporation with the new parent Society; and while wishing the greatest success to this new enterprise, and a glorious career for the Royal Society of Medicine, we can ourselves look forward with confidence to a wider influence and a greatly increased usefulness.

"Who loves not Knowledge? who shall rail
Against her beauty? May she mix
With men and prosper! Who shall fix
Her pillars? Let her work prevail."

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# SPECIFIC CAUSES OF OXY-PHOSPHATE CEMENT DISENTEGRATION IN THE ORAL CAVITY.*

By J. O. Keller, D.D.S., Chicago, Ill.

A reasoning understanding of the physics and chemistry of the powders and liquids and resultant cements is necessary to a solution of this problem.

Zinc oxide (molecules, one atom of zinc and one atom of oxygen) is the main, and most generally the entire, constituent of dental cement powders. By calcination to about 2,000 degrees, these molecules are concentrated into compound molecular, small, soft, flour-like, flaky particles. These soft flaky particles, when fused together at high heat, about 2,800 degrees, become hard, vitrified, grit, glass-like masses.

Laboratory experiments show that low fusion powder particles of zinc oxide either in powder or cement mass, are readily acted upon by such acid and acrid fluids as are found in the salivary secretions, and that in proportion as hardness, concentration and vitrifaction by high heat is gained, they resist the action of such acids and acrid agencies; also that the soda of the soda phosphate combines readily with them.

### Physical and Chemical Technic.

The forces which hold together the structure of cement masses are physical and chemical, one physical and two independent chemical forces.

The cement mass is made up of the following units, not including its elementary composition, as follows:

* Published in the *Dental Review*.

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First, zinc oxide molecules as bought in a crude shape in the drug shops, and afterward calcined into low fusion or high fusion zinc oxide masses. The low fusion will be in flour-like, flaky condition, and the high fusion in flour grit-like particles, or coarser, according as pulverised. Second, phosphoric acid. Third, water holding phosphoric acid in solution. Fourth, aluminum phosphate, soda phosphate, zinc phosphate, or other phosphates, either alone or combined severally as may be required. At least one phosphate must be used. Several may be used.

These bonds of union and forces in the cement mass are as follows :—

First—The atoms in the zinc oxide molecules, one each of zinc and oxygen, are held together by the force of chemical adhesion.

Second—The force which holds together the molecules of zinc oxide in the calcined particles is called the force of physical cohesion. This force holds together units of the same character.

Third—The chemical units in phosphoric acid and its water diluent and its phosphates are entirely chemical, hence the force which holds them together may be called chemical adhesion, chemism or chemical affinity.

Fourth—Water is a chemical, each molecule containing two atoms of hydrogen and one of oxygen. It is a high phosphoric and phosphate solvent, and the agency of crystallization in dental cement masses.

Phosphoric acid and water are the basic constituents of all oxy-phosphate cement liquids—Soda, aluminum, lime, magnesia, and other ingredients may be incorporated by chemical reaction, and become phosphates accordingly. Soda is most always used to neutralize and regulate the setting, without which or other neutralizer, the powder and liquid,

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when mixed together, would set violently and with high heat. An aqueous solution of glacial phosphoric acid (rightly named glacial soda phosphate) is the usual and easiest way to make a cement liquid. It will contain from 50 to 70 per cent. of impurities in the form of soda phosphate, from 5 to 20 per cent. of free phosphoric acid, balance water, free and combined. In chemical union with calcined zinc oxide cement powder, the resultant cement would be a double phosphate of soda and zinc.

### Solvent Conditions of the Integers or Units of Strength in Oxy-Phosphate Cement Masses.

Zinc oxide is practically insoluble in water, requiring 700 parts to hold it in solution. Various acids in water solution will attack zinc oxide readily and chemically combine with it.

Magnesia is very insoluble in water, requiring 10,000 parts to hold it in solution. Soda is very soluble in water, requiring but one part by weight to hold it in solution. Soda phosphate is so very soluble in water that one pound of it will be held in solution with eight ounces of water. Phosphoric acid is so very deliquescent that seven pounds of it will be dissolved in one pound or one pint of water. The metal alnminum is absolutely insoluble in water. Its oxide will not dissolve in 5,000 parts of water. Aluminum phosphate will not completely dissolve in 100 parts of water, the exact percentage not having been determined.

These solvent conditions should be kept in mind, because the degree of solubility in water, in a measure, determines the degree of solubility or attack by the acid or alkaline reagents in the mouth. Water is the means of conveying the diluent acid and alkaline substances not only into contact, but also into the porous cement structure.

Zinc oxide, soda, phosphoric acid and water, are the main

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constituents of dental cements ; hence cement masses consist of molecules or particles of zinc oxide held together in chemical union by a phosphatic liquid, formulated as aforementioned.

An oxy-phosphate cement mass holding crowns and bridges used as filling therefore is double, triple or quadruple phosphate or higher in series according to the number of phosphates incorporated. With aluminum as a phosphate in the liquids, and a zinc powder, the result would be a double phosphate of zinc and aluminum in a cement mass. A combination of magnesia, soda and aluminum phosphates in the liquid and zinc oxide powder would make a quadruple phosphate, magnesia, soda, aluminum and zinc in the cement mass.

### Crystallization.

Cement masses, made with low fusion powders, begin to crystallize as soon as the powder and liquid are mixed. It will expand during the first twenty-four hours, contract the next twenty-four hours and during the next twenty-four or forty-eight hours will expand more than the contraction and expansion of the preceding forty-eight hours. These movements result from a crystallizing process. It may continue for several months, after the cement has apparently set. The crystal formation is sometimes so extensive that the whole cement mass becomes porous, and with open spaces throughout its entire structure. It may be more properly called a crystal porosity. The whole mass of low fusion powder cements undergo complete or body crystallization. High fusion cement masses, that is cement masses made with high heat calcined powders, undergo but partial crystallization because of the size of the particles. They will have consequent less bulk changes, and crystal porous structure.

Oxy-phosphate cement masses are not liable to physical solubility or solubility in water. Cement pellets made with

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high and low fusion powders did not dissolve during four years in water at ordinary room temperatures, nor during twenty-four hours in boiling water.

### Chemical Disintegration.

Cement masses of zinc and other phosphates are soluble only in the acid, alkaline and acrid chemical agencies of the mouth, as herein shown.

### Physical and Chemical Experiments.

High fusion powders require less than half as much liquid as low fusion powders—40 grains of low fusion powder were mixed with enough liquid to make a thick flow, suitable for crowns and bridges. The resultant cement mass weighed 85 grains. Forty grains of high fusion powder required only 20 grains to make a similar flow and consistency. Considering the soluble tendency of the phosphates, this experiment shows at least one reason why cements made with low fusion, flaky, flour-like powders will be more soluble in the salivary secretions, than cement masses made with high fusion powder.

A thin flow mix, suitable for inlay work, required 30 grains of liquid for high fusion and 60 grains for low fusion powders, 40 grains of powder being used each mix. Double the quantity is required for the low fusion powders. A thick mix suitable for filling work required 10 grains of liquid to 40 grains of high and 15 grains of liquid to 40 grains of low fusion powder. Hence the importance of using high fusion powders to gain strength, less solubility, and greater stability of cement structure.

### Physical and Chemical Constitution of the Saliva.

The salivary secretions contain about 986 parts of water to the thousand general average. They are impregnated with various salts, acids, alkalies, and organic matters, which make the oral cavity one of the most intricate, physical and chemi-

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cal laboratories in the whole economy. The saliva may be impregnated with lactic, acetic, muriatic, sulphuric, uric, oxalic, malic, and other acids, either free or combined, and salts may be found either in the healthy state or indicative of some diseased action. The acidity is sometimes so excessive as to corrode the gums and lips, to set the teeth on edge, and make them sensibly rough to touch and appearance. It may be excessively acid one day and extremely alkaline the next.

Saliva contains frequently, either free or combined, such alkaline substances and salts as potassium chloride, lactates, muriates and phosphates of potash, lime and soda. Sulphocyanide of potassium is frequently abundant. It is sometimes highly charged with sulphurated hydrogen. This gas is harmless of itself, but when absorbed by the salivary secretions of the mouth causes them to become very acid or acrid. This acridity is frequently so strong as to corrode and blacken amalgam fillings, and to tarnish (not corrode) gold fillings in a few days.

The ultimate crystal porosity of many cements causes them to absorb the salivary secretions into their crystal spaces. The water in the saliva carries with it the various acids, alkalies and salts with which it is impregnated, not only in contact with the cement mass, but into its porous crystal structure. Water is not only the agent of crystallization, but carries the agency of solution or disintegration into the mass. By direct chemical action or by chemical reaction, or by acrid erosion, oxyphosphate of zinc cements are dissolved in the mouth as follows:

### Acid Chemical Reaction.

If any acids in the oral fluids have a greater affinity for the soda and zinc oxide (or other hosphate base) in the psoda, zinc phosphate cement mass than the phosphoric acid with which they are in chemical union, then such acids will attack,

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eat, dissolve or combine with said soda and zinc, enter into chemical union with them, liberate the phosphoric acid, and the filling gradually dissolves. Malic, uric, oxalic, lactic and some other acids are also always found in the salivary secretions, either free, or combined. It has been shown by laboratory tests that these acids will dissolve dental cement structure.

### Alkaline Chemical Reaction.

If any alkaline substance in the saliva has a greater affinity for the phosphoric acid than said acid has for the zinc, soda, aluminum, magnesia, or other oxide base with which it may be combined, then said alkaline agent will chemically unite with the phosphoric acid, liberate the zinc and other oxides, and the cement gradually dissolves. Potash, sulphocyanide, potassium, potassium chloride, chloride of lime and other alkalies and bases either free or combined, are frequently, some always, present in the salivary secretions. Aqueous solutions of most of these alkalies and bases will readily dissolve cement structure because of their higher affinities for its phosphoric acid, than said acid has for the zinc, soda, magnesia and other bases with which it may be combined in the cement structure. Sulphocyanide has a double reaction. It is somewhat acid in its nature, at least very aceid and is also alkaline. The higher affinity of the phosphoric acid in the dental cement mass for the cyanide in the saliva causes it to surrender its chemical union in the cement mass, which gradually dissolves. Sulphocyanide, being both acrid and basic, renders it liable to act both upon the acid and basic structure in the cement mass. The cyanides will unite with the phosphoric acids and sulphocyanide will eat the soda, magnesia and zinc oxide in the cement structure. This is what is called DOUBLE CHEMICAL REACTION. The lactic and muriatic acids in the lactates and muriates of soda, potash, and magnesia in the saliva have feebler affinities



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for these bases with which they are in chemical union than they have for the zinc oxide and soda oxide in the cement mass; hence they will give up their chemical union in the salivary secretions, attack and chemically unite with the zinc and soda oxide in cement mass, liberate the phosphoric acid and the filling gradually dissolves. This double chemical reaction will take place under all circumstances, unless the zinc oxide particles in the cement mass are calcined so hard and strong and tough as to resist the acid agencies of the mouth. Glass-like, fully vitrified, very hard and properly calcined zinc oxide particles will resist disintegration by the acid agencies of the mouth, but the alkaline agencies are still free to combine with the phosphoric acid in the cement structure. Unless the phosphate liquid is so formulated as to reduce the degree of solubility in water and consequent less solubility by its alkaline affinities and thus to render the cement mass less liable to disintegration, cements will continue to dissolve in the salivary secretions.

### The Relative Solubility of Cements.

Under the same conditions, cements made with low fusion powders will dissolve quicker than high fusion powder cements. Acid agencies of the mouth will dissolve cements made with low fusion powders very readily, because the particles are smaller, not condensed by calcination, and in consequence the cement mass is more porous and crystalline in structure. It is more readily acted upon by the acids of the mouth, hence such cement masses wash out quickly. The alkaline agencies of the mouth have a strong affinity for the soda phosphate, which is almost universally used in cements, hence the low fusion powder cement masses are in consequence more readily dissolved. The high fusion cement masses, because of the hard, diamond-like condensed state of its grit particles, will resist the action of the acids in the saliva; hence such cement masses are more durable.

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British Journal of Dental Science

LONDON, MARCH 16, 1908.

# THE LAW AND THE PROPHETS.

Two recent dental fatalities under the hands of unregistered men have again pointed out the fact that the laws for the protection of the public from the ignorant practitioner are woefully defective, in fact are practically non-existent. One case was that in which a patient in Soho died after an injection of cocaine; the other was that of a woman at Blackburn who succumbed from the effects of ethyl chloride. In the former case the jury brought in a verdict of manslaughter, but in the subsequent trial before Mr. Justice Bucknill at the Central Criminal Court the jury found the prisoner not guilty, with which the judge concurred. The Coroner's inquest at Blackburn resulted in a verdict of accidental death, so that both these ignorant and untrained men are allowed—as many others of their kind have been—to go free and carry on their trade scatheless.

The Medical and Dental Acts were framed to afford the public protection from ignorant pretenders, by instituting a Register in which the names of recognised practitioners could be found, who might reasonably be entrusted with the health of the community, and no one who was not on the roll could usurp the titles conferred on those inscribed thereon. But it was soon found that the way to evade the law was simple and effectual, and unregistered dental practitioners increased at a most surprising rate, obtaining skilled legal aid in assisting them to sail as near the wind as they could, without bringing themselves within the letter of the law. This body

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of men have united themselves together, and, not content with practising—which up to the present it has not been possible to suppress—they wish for fresh legislation to admit them to the privilege of calling themselves dentists, by re-enacting the comedy of 1878 when all sorts and conditions were enrolled.

To this end they wish to join hands with the registered dentist under the specious plea that if the latter will consent to their admittance they will not only discontinue all opposition, but will join forces to petition the Legislature to pass a Bill prohibiting practice for gain by all not on the new and enlarged Register and prophesy success. To this proposal we have offered and still do offer our most strenuous opposition.

If there were a reasonable chance of the Legislature passing such a Bill it might be worth while to sell our birthright. But is there? True, such restrictions exist in some of our Colonies, but they are far ahead of us in many ways, they are more Socialistic and therefore in favour of protecting the poor and ignorant. We are much more individualistic in Great Britain; we are still under the impression that buying in the cheapest market is the first axiom of political economy and we hold on to the mottoes of "*Caveat emptor*" and "vested interests."

And suppose we paid the price, joined forces with the unregistered, and failed. We might lose what we already possess, after giving our irregular brethren a handle they would not be loth to to use for ever after, with the consciousness that they despised our motives and ourselves.

We must recognise the fact that a large number of the public ignorantly, and a large number knowingly, prefer to go to the unregistered. We must be prepared to safeguard our title, our qualification and our position, It is not for us to seek legislation at the cost of self-respect, but it is ours to cultivate a high standard of practical and scientific attainment, so that the patients who appreciate such will find in us that which they require.

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LIVERPOOL DENTAL HOSPITAL.—The monthly meeting of the committee of the hospital was held at the boardroom of the hospital, Mount Pleasant, when Mr. Louis S. Cohen, C.C., was re-elected chairman and Mr. R. Matthews was re-elected vice-chairman, for the ensuing year. It was announced that the subscriptions to the new building fund (promised and paid) amounted to £7,721, and it was decided to make strenuous efforts to raise the balance of the £10,000 required.

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FALSE TEETH FOR PAUPERS.—The Chapel-en-le-Frith Board of Guardians met recently, Colonel Hall, J.P., presiding. Discussion took place on the question of providing artificial teeth for the inmates of the Workhouse.—The Medical Officer (Dr. Anderson) recommended that a female inmate be provided with a set.—In reply to a question as to the probable cost, Father Hayward said it might be anything from one pound to one hundred.—Mr. Sutcliffe moved that estimates be invited from local dentists for the set of teeth. —Several gentlemen thought that a set ought to be procured at a cost not exceeding £5, but Mr. J. E. Lomas suggested that 50s. should be the limit.—Eventually a limit of three guineas was decided upon.

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THE DENTISTS ACT IN CAPE COLONY.—The Medical Council at Capetown concluded an enquiry into a charge against Joseph Price, a licensed dentist, of employing unqualified assistance. The evidence occupied three sittings of the Council, and the Council intimated that they adjudged Price guilty of disgraceful conduct in a professional respect.

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A CRUEL FRAUD IN MID-LOTHIAN.—A somewhat ingenious form of fraud upon Mid-Lothian householders has come to light on account of information lodged with the Mid-Lothian County Police. The alleged frauds are said to have been committed at Ratho by a man who is stated to have induced several innocents to believe that he was the repre-

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sentative of an American firm of dentists, who had their headquarters in London. According to the informant, the so-called dentist was a man of about thirty-five years of age, and was stylishly dressed. He had in his possession a small square box, which is alleged to have contained a number of instruments for extracting teeth. He told his Ratho customers that he could extract live nerves from the teeth, and as a result toothache would never trouble again. For this wonderful cure his charge would only be a shilling per tooth. According to several persons who submitted their teeth for operation by the alleged imposter, the mode of extraction consisted of scraping the cavity of the tooth, and injecting liquid from a phial. After this operation a white stringy substance was produced from the tooth, which the operator represented was the nerve. In the majority of cases, the supposed dentist had only departed when the pain in the teeth was greater than ever. So far the whereabouts of the mysterious individual are unknown but the county police desire to warn the public of the existence of what they allege to be a most flagrant type of fraud.

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THE ACTION OF PREPARATIONS OF IRON UPON THE TEETH.—In a recent number of the *Therapeutische Monatshefte* Dr. Morgenstern describes the results of a series of experiments, extending over a period of from two to four months, on the action of various medicinal preparations of iron upon the teeth. Thin sections of the teeth of man, the ox, and the calf were immersed in solutions of various salts of iron and ferruginous waters and examined microscopically at regular intervals. The results show that reduced iron, saccharated solution of iron, and solution of albuminate of iron exert no deleterious effects whatever and in this respect stand in a class by themselves. The citrate of iron has a slight action, while the sulphate, lactate, and pyrophosphate of iron induce a partial decalcification and a pronounced blackening of the teeth. Ferrous iodide and ferrous chloride are the most injurious preparations of iron, 10 per cent

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solutions of these salts removing the enamel in a few days. As regards ferruginous mineral waters the injurious action on the teeth is due not merely to the proportion of iron present but more particularly to the presence of earthy salts which tend to increase the corrosive action of iron. When iron is administered it reappears in the form of an albuminate which is incapable of harming the teeth. Dr. Morgerstern's results serve to emphasise the necessity of advising patients to take most preparations of iron through a glass tube.

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Unlicensed Dentists in Turkey.—In Constantinople, and in the Turkish provinces as well, there are many persons who exercise the practice of dentistry without any qualification whatever. They often style themselves by the well-sounding name *chirurgiens-dentistes*. Prohibitions which have been issued from time to time by the authorities have proved altogether inefficient. This time, however, more energetic means have been taken. According to the *Levant Herald*, all the door-plates of the would-be dental surgeons have been removed and the individuals themselves will be subjected to judicial prosecution.

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The First Permanent Molar.—The first permanent molar is the key which preserves the normal relation between the upper and lower jaws in the whole period of loss and replacement of the temporary denture. It therefore becomes the duty of every general practitioner in his examination of every child's mouth to note among the first things whether the first permanent molars are in normal occlusion. If they are not, the child needs either his assistance or the assistance of an orthodontist at once, because we have every reason to believe that if they are allowed to remain in abnormal occlusion there will be more and more complications as the permanent teeth erupt, while, if they are restored to their normal occlusion, the occlusion of the permanent teeth as they erupt will probably be more nearly correct.—*Fred B. Noyes, Chicago.*

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# Abstracts of British & Foreign Journals.

## THE EXCLUSION OF FAT FROM THE DIET.

Physiological considerations would imply that many minor ills of the body would be avoided if only care were taken to include a sufficiency of fat in the diet. Fat, we know, is about the most compact form of fuel which we possess while it exercises a favourable effect upon the processes of the intestinal tract. In excessively cold countries a rich fatty diet is indispensable, for fat is the only food substance which will rapidly replace the heat lost by the body, and travellers in the Arctic regions have related that they could only be kept warm and comfortable by a generous supply of fatty food, in comparison with which the effect of extra clothing was inappreciable. The tendency of to-day in many quarters is to exclude as much as possible the fatty portions of animal foods. Pieces of fat are carefully cut off the slice of ham, mutton, or beef, and only the lean parts are eaten. Indeed, for some unaccountable reason the eating of fat is regarded by not a few as positively vulgar. Such an attitude, of course, displays an ignorance of physiological facts. Cold feet, hands, fingers, ears, and chilblains would in many instances be avoided under a generous diet of fatty food. A digestible fat favours nutrition considerably; it spares much waste of the tissue-forming elements of food. When lean meat alone is given large quantities are required in order that nutrition and waste may balance one another, but if fat be added the demand for flesh is less. Besides, therefore, giving an advantage in regard to making good the repair of the body, the use of fat is economical from the point of view of pounds, shillings, and pence. The absorption of large quantities of fatless meat again tends to overload the blood with nitrogenous waste products. In anæmic persons the partaking of an easily digested fat is commonly followed by the best results, nutrition is greatly improved, and the condition of the blood is often restored to normal. It is well known, again, that easily absorbable fats, such as butter, cream, cod-liver oil, bacon fat, and dripping, are especially valuable to sufferers from wasting diseases. The introduction

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of the old-fashioned and well-prepared suet pudding into the diet is in perfect accordance with scientific teaching, and from the dietetic point of view, especially in the feeding of young growing people, does probably a really beneficial service to the country. The assumed aversion to fat on the part of a great many people is silly and mischievous, for there can be little doubt that a reasonable proportion of fat in the diet is calculated to preserve the standard of health. Cases of true repugnance or intolerance do of course exist but on the whole they are rare.—*Lancet.*

## INFLAMMATIONS OF THE THROAT OF DENTAL ORIGIN.

By F. Lemaire, Paris, France.

The author reports several cases of tonsilar inflammation caused by a focus of infection in the mucous membrane near the third molar. In such cases the infection of the oral tissues is brought about by the presence of a cavity of decay in close proximity to the gum. The disturbance begins by an erythema of the gum around the neck of the carious tooth, or of the cul-de-sac posterior to the tooth. The inflammation spreads to the anterior pillars of the fauces and thence to the tonsil. Two forms of this type of inflammation of the throat have been observed, one erythematous in character, giving rise to difficulty in swallowing, and the other phlegmonous, which is in reality a complication of the former. These inflammations are not the result of a special infection, but are of polymicrobic origin. The onset of the disturbance is sudden; the patient experiences a sensation of heat and tickling in the throat, the voice assumes a nasal sound, the tonsils become hypertrophied and covered by a pultaceous exudate. The inflammation spreads to the soft palate and uvula and to the opposite tonsil, being seldom confined to the tonsil of the corresponding side. The phlegmonous type is accompanied by dysphagia and systemic symptoms. The prognosis is favourable in the case of the erythematous inflammation, but in that of the phlegmonous type, owing to the systemic complications, it may be grave. The treatment should consist in the removal of the focus of infection by fill-

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ing the carious cavity or by extracting the third molar should the latter course be considered indispensable for the eradication of the source of the infection. Should there be evidences of infection under the flap of mucous membrane—which often conceals a portion of the crown of this tooth—the thermo-cautery should be employed and the infected tissues thoroughly cauterized. The throat inflammation subsides upon the disappearance of the abnormal mouth conditions.

The author reports five cases of persistent throat inflammation and tonsillitis caused by the infectious phenomena under consideration.

*Case I.* A woman of twenty years had been referred to him by her family physician to ascertain whether the condition of her teeth could be in any way responsible for the nine attacks of tonsillitis from which she had suffered that year. The examination of the mouth showed the gum tumefied around the necks of the teeth, and the left third molar badly decayed and with infected root canals. In addition, the masticating and distal surfaces of that tooth had broken down and a portion of the gingival mucous membrane was lying within the carious cavity. The gum around this tooth seemed deeply inflamed, likewise the mucous tissue of the anterior pillar and the tonsil of the same side. The uvula, soft palate, and right tonsil were also swollen. There was dysphagia and the breath was offensive. The left third molar was extracted, the dentine was scaled and polished, and the gum suitably treated. The patient was seen some time afterward and reported that the tonsillitis had not recurred. Three months later, however, she suffered from another attack caused by caries of the right third molar with involvement of the pulp. There was œdema of the cheek and a slight trismus. Proper treatment of the root canals and filling of the cavity was followed by the disappearance of the trouble.

In addition, it should be noted that tonsillitis may likewise be induced by the pathologic eruption of the third molar. The following case serves to illustrate such an occurrence:

*Case II.* This was the case of a woman aged 24 in whom the inflammation of the flap of the mucous membrane covering almost the entire crown of the third molar had spread to the uvula, soft palate, and tonsils. There was dysphagia and the tonsils were covered with a pultaceous exudate. The in-

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flammed tissues eventually became œdematous, there was severe pain on swallowing, fever, body aches, and submaxillary adenitis. The case was diagnosed as one of phlegmonous inflammation of the throat. The right tonsil was more severely affected than any of the adjacent structures. The treatment which was instituted in conjunction with the attending physician consisted in the administration of ipecac in doses of gr. v each. After the second dose the efforts to vomit caused the abscess of the right tonsil to break, which at once relieved the patient markedly. An antiseptic treatment of the mouth followed during fifteen days, together with the administration of efficient tonics, and the eradication of the pus pocket by means of the thermo-cautery brought about complete recovery.

In this case it is almost certain that the phlegmonous tonsillitis would have recurred if the condition around the third molar had been allowed to remain undisturbed.—*L'Odontologie* from *Cosmos*.

# Reports of Societies.

## SCHOOL DENTISTS' SOCIETY.

A GENERAL MEETING of the School Dentists' Society was held at the National Dental Hospital, Great Portland Street, London, W., on Monday, February 17th, 1908, at 8 p.m. Mr. Sidney Spokes, the President, in the Chair.

There were present in addition Messrs. W. T. Elliot, C. E. Wallis, Norman Bennett, A. E. Baker, Edward Keen, George Thomson, W. W. Gabell, A. Maurice, R. R. Ward, Hugh Love, F. Breese, and Willlam Fisk, Hon. Secretary.

The Minutes of the previous meeting were read and approved.

The President notified the election by the Council of Mr. C. L. Routledge, 62, Jesmond Road, Newcastle-on-Tyne, as a member of the Society.

The President then announced that the discussion for that evening would be on the three papers read at the last

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meeting of the Society. The first paper was by Mr. Elliot, entitled "The Education (Administrative Provisions) Act and Dentistry." The second by J. C. Oliver entitled "The State and School Children's Teeth." The third by Mr. Edward Keen entitled "Fifteen Years' Work Amongst Poor Law Children and Some Deductions Therefrom."

Mr. Shorrock of Carmarthen sent his remarks with a letter regretting his inability to be present personally and asking that some member of the Society should read them on his behalf. Mr. Wallis undertook this duty.

"Give me the children of this country and I will annihilate the dental parlour, rob quackery of its victims, solve State Examining Board problems, win the eternal gratitude of the dental faculty and place the dental profession on the highest pinnacle of public favour."

I do not know the author of the above words, but four years ago they headed an article on School Dentistry (B.J.D.S. No. 872)). Since then I have been examining children on the lines suggested in that article and and at the same time perfecting a system of school dental administration.

In view of the meeting to be held on Monday next, Mr. Fisk has asked me to pen a few lines on my methods. All teachers I have spoken to on the subject are convinced that school dentistry will not be wholly successful until it is made penal, like school attendance. This is drastic, and we cannot hope for such an Utopia for many many years to come. We must start on a lower rung of the ladder. The children must be got interested by means of short lectures and they must be inculcated with a desire to look after their mouths. It is surprising how easy it is to examine children after one of these lectures. In the last thousand children I have examined I have not had one single objection or one case indicative of nervousness. How are we going to persuade the authorities? I would suggest that the School Dentists' Society bring to their notice the charts and what has been done. I invite members of the committee to come to the school and listen to the lecture and see the examinations. It does good. The interference with school work is almost nil. The children assemble for a lecture and are afterwards sent to their respective classes. I use a small class room for the examination and take batches of twelve at a time. A pupil teacher writes the reports as I dictate. In small schools I do the clerking myself. Books containing 250 report forms and

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250 duplicates are supplied by the authorities. (It is not necessary to have anything other than the number printed on the dnplicate). The report has a perforated edge. This is the one I am using at present.

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## BOROUGH EDUCATION COMMITTEE.

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### Dentist's Report.

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Name..... Age.....

No. of temporary teeth requiring extraction.....

No. of permanent teeth requiring extraction.....

No. of permanent teeth requiring filling.....

---

General condition of mouth.....

.....

General Remarks.....

.....

.....

Dental Surgeon.

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The report having been signed is handed to the head-master and then passed on to the parent. I obtain my statistics from the duplicates left in the book. I further have an alphabetical index book in which every name is entered and the number of the report noted. In this way I can trace every child attending every elementary school in the town. I only put down work immediately required. I can examine sixty children an hour. I think if the Board of Education would appoint one inspector to so many children

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to do this and visit each school twice a year the thin edge of the wedge is in. An inspector should be able in large towns to examine 20,000 children twice a year. In country areas where the schools are scattered only half this number would be done.

Now to the treatment. My own opinion is that to appoint a dentist to do the work in the schools is an impossibility and to put up special surgeries is also out of the question. If what I read of the Cambridge scheme is correct, I can only call it puerile. Besides one should think of the dentist. Would any of you gentlemen care to be extracting temporary teeth and putting in copper amalgams for the rest of your life? We murt have a little variety in our work. It is depressing enough as it is.

Besides the cost to the ratepayers would be enormous. In looking over the dental register I roughly estimate that there is one dentist to every 7,000 of population. To every 10,000 of population I calculate 1,100 children will be attending the elementary schools. This means 750 to each dentist. At least 100 of these are children under six years of age, and I do not propose to report on these at present. Taking my last report of what obtains in elementary schools, and I think it can be taken as a fair sample this means that to every 650 children the work required to be done is 2,845 teeth of which 2,093 are extractions and 752 fillings. Basing this on Mr. Elliot's amended charges (B. J. D. S. No. 960, page 63) the cost would be £198. But as things are at present we cannot expect much more than half this amount of work to be done.

I am convinced that if dentists would pull together and do school work at a reduced fee it could be divided between local men. It works out at one hour per day per dentist and 6s. per hour. That is under present conditions which you will all admit are at zero. In two years time the work would be less. This then is my scheme :

(a) S. D. S. charts to be used and Shorrock report forms. (See B. J. D. S No. 960, page 63) with the addition of list of dentists who will undertake to do the work at a reduced fee in specified hours.

(b) An inspector to each 20,000 children to lecture and examine and report twice per year. Salary £300 and travelling expenses.

(c) Where possible occasional lectures to the parents on the care of the teeth.

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Now you are going to ask me "How are you going to force the parents to have the work done. *You cannot;* unless as I said at first you make it penal. But you can coerce them and make dental inspection universal. Make it "the thing" and I rather fancy most of us would have a surprise. "The thing" is such a good "first goose" I am sorry I cannot be with you on Monday, but, gentlemen, now is the time to show the powers that be the necessity; the ease with which on a small (comparatively) expenditure school dental inspection can be carried out. Believe me we have the sympathy of the schoolmasters and the teachers.

Let us all be up and doing
Nor our onward course abate,
Still achieving, still pursuing
Learn to labour and to wait.

Mr. C. EDWARD WALLIS said that in view of the latest requirements sent out from the Board of Education and dated January 3rd, 1908, it is plain that the authorities require detailed information as they state as follows: "General condition and cleanliness of temporary and permanent teeth and amount of decay. Exceptional features such as Hutchinsonian teeth should be noted. Oral sepsis" and under the next heading is put among other things "malformation (palate), etc." Now it is perfectly plain to all of us that it is only those who are accustomed to examining palates that can give any information that is worthy of the name and therefore it appears to me that that also should come as part of a dental examination.

Moreover I think that if we are to record these conditions satisfactorily some more detailed means of recording them must be adopted other than the plan that many propose of merely using numerical or alphabetic signs to record the existence and degree of oral sepsis.

It is moreover my opinion that a chart even badly filled up would be very much better than a mere list of numbers and letters which would not be as immediately self explanatory as a single chart with the amount and location of dental caries marked in pencil and with any existing pathological conditions underlined.

The charts could be printed on cards with a separate card for each child and indexed as on the card index system so that a thoroughly methodical, graphic and easily understood record of the dental condition of the school children could be obtained and recorded.

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For his part he strongly urged the adoption of some graphic method based on the charts used at the examination of the L.C.C. Michael Faraday School but leaving out a great deal of the matter which was required at that time as it would not be necessary at such an inspection as that which is now under discussion.

Mr. WILLIAM FISK said he did not agree that it was necessary in carrying out the dental inspection of children to use ordinary charts. We have to consider what really is the purpose of this inspection. The Educational Authorities required to know the dental condition of the children, the extent of dental disease, and explanatory figures would best afford the information, by giving the number of teeth either temporary or permanent, diseased.

From their point of view it was not necessary to know the names of the carious teeth and the position or extent of the disease existing in each tooth. From the dental point of view charts would be ideal and also for statistical purposes valuable: but the Board of Education were not concerned beyond wishing to ascertain the number of children requiring dental attention. Certainly figures would give the public an idea of the condition of the children.

Charts required thinking out and the ordinary member of an education authority even if he saw a chart could not be expected to understand it. It required some education to grasp it.

Mr. Elliot's idea of a superintendent or an officer responsible for a district he believed to be good and sound. Probably it would be found that the Medical Officer of Health was the proper person to supervise. An ideal Medical Officer of Health would be one possessing in addition to his medical qualification a diploma in public health and in dental surgery.

The logical outcome of inspection was treatment. Behind all this was the question of environment, public health generally and legislation to improve it.

Mr. EDWARD KEEN: I am entirely in accord with Mr. Oliver's paper, the summary of which is compulsory examination of the teeth of the children in the elementary schools. My reason for this is that in the day schools where I attend the blind and deaf children under the L.C.C. so many parents refuse to have their children's teeth seen to.

At Old Kent Road 30 letters were sent asking parents'

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permission and 10 refusals were returned and eight other children did not appear. At "Hugh Myddelton" 30 letters were sent and only 22 appeared. At Ackmor Road, Fulham, 24 letters were sent and only 4 children appeared and the head mistress informed me that some of the letters were returned accompanied by insult and abuse.

Of course if compulsion is resorted to no payment by parents can be expected. In any case I think the scale of fees suggested by Mr .Elliot is too high.

Mr. W. W. GABELL said the Education authorities had arrived at regular examination of school children's teeth, and in some cases had advanced, or were prepared to advance, as far as treatment.

The Dental profession was now being asked what could be done to meet the needs of the children without undue cost to the ratepayers and Mr. Elliott was to be thanked for putting forward such a practical scheme. The paper proposed that large Education Authorities should appoint an all-time Inspector at a fee of £500 to examine all the children, and that they should then be sent to local dentists, who would accept a special scale of fees for treatment. Whilst this might prove the best scheme for big towns, he (Mr. Gabell) was more in favour of appointing a dentist to each school or group of schools of 1000, who should both examine and, where required, treat the children, if possible at the school itself, again at the general scale of fees.

His own experience was that he could easily look after a school of 100 boys (ages 9 to 14, and of poor stamina) in a half day a month. That would mean 500 at a half day a week, or 1000 taking all ages and average physique, and he believed there would be a good supply of dentists forthcoming willing to give up half a day a week for these appointments.

Turning to the scale of fees suggested he had tried to give a practical test to it by applying it to the work done at a school he was responsible for during the last two years with following result.

1906.

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| 108 fillings at 2s. 6d. | ... | ... | £1 10 0 |
| 14 gas cases at 5s. | ... | ... | 3 10 0 |
| 12 sundries at 2s. 6d. | ... | .. | 1 10 0 |
| | | | £18 10 0 |

Visits, 18.



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Hours of Work (including inspection and charting not specially charged for), 32
Fee per hour, 11s. 6d.

| 1907. | | | |
|---|---|---|---|
| 61 fillings at 2s. 6d. | ... | ... | £7 10 0 |
| 26 gas cases at 5s. | ... | ... | 6 10 0 |
| 16 sundries at 2s. 6d. | ... | ... | 2 0 0 |
| Visits, 14. | | | |
| | | | £16 0 0 |

Hours of Work (including inspection and charting) 28.
Fee per hour, again 11s. 6d.

Though the work done each year was very different the earnings per hour worked out to the same figure, 11s. 6d. This, of course, was only a deduction from one operator's work, but he thought he was a fairly rapid worker, and the cavities included a good proportion of interstitial decay. At this figure a dentist might expect from £60 to £90 a year from a half day per week.

With regard to the question of charting at the examination it depended entirely on the object of the inspection. If the statistics were for the Education Committee, charts were unnecessary, but if the reports were to go to the parents, with a view to treatment, charts should be very helpful.

Mr. A. E. BAKER said he considered it problematical as to how far the State should guarantee the sound condition of children's teeth and agreed with Mr. Bennett in deprecating compulsion. He thought the better plan would be the gradual education of parents and teachers to their responsibility in the matter.

Dealing with the question of inspection and treatment he would strongly urge the detection and reporting of carious cavities at the earliest stage, even the so-called pin-point cavities.

In deciduous teeth, molars especially, they being mostly involved, where caries had not encroached closely on to the pulp, it is easy to shape out good cavities. The dentine is quite insensitive, burs can be used and the smallest children instead of being afraid, are frequently amused by the sensation caused by the revolving bur. Perfect fillings can be accomplished in these cases. Far from condemning copper amalgams, he mostly had the best results when using

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Kirkbride's, which does not stain the tooth, and in cases where all other filling materials had failed.

With permanent teeth the smallest cavities should be sought out and treated, especially so with the twelve-year-old molars.

From his experience of the inspection of boys of the public school age (thirteen years and upwards), he was strongly inclined to back the six-year-old molars in preference. The latter, at this age, might be badly carious but they had been in active use for six or more years, whereas the twelve-year-old molars although only erupted one year and often less, would frequently be found to have a considerable amount of caries under a pin-hole in the enamel. He felt sure that if the six-year molars were well treated, *i.e.*, had any cavities filled when very small they would prove to be good servants, the same, of course, applied to the twelve-year-old molars and other teeth.

It would, perhaps, be too ideal to expect the attainment of this line of treatment with these school-children for a very long time; but what may be ideal at one time is often capable of realisation at a later period.

Mr. Baker's whole point in advocating it, is that more and better work could be accomplished in the shortest space of time, with the least amount of trouble to the operator, patients, teachers, and everyone concerned.

Messrs. BENNETT, THOMSON and MAURICE also took part in the discussion.

Mr. ELLIOTT, in replying to the discussion, expressed himself pleased that so many had taken part in it and was glad to hear that nearly all present had spoken largely in favour of the suggestions he had made; he had quite expected that much of what he had written in his paper would not have met with approval. The main ideas which he had in considering this subject when he wrote the paper were: Firstly, that of economy, and secondly, a scheme which would be the most satisfactory and useful to the majority of dental practitioners. Any ideas that we might tabulate must have upon them the stamp of economy, for all those Local Authorities who have been considering this matter have expressed themselves more or less strongly upon the increased cost which the ratepayers have had thrown upon them, and there is a great tendency for them to ignore this matter to such an extent as to make

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medical and dental inspection more or less a farce. From the Memoranda that have been issued by the Board of Education it is quite clear that the fond hope that many of us have had that time and money might possibly be expended in tabulation of dental statistics of such character and elaboration that they would be a valuable compendium for all time will not at present be realised, for it is quite evident that no money is to be allowed to be spent to such an extent as this. and what he understands is going to be done is only of such a nature as to show to what extent treatment will be required. Dr. Elliott was very glad to understand that the Board of Education has proposed to allow grants to those Local Authorities who will endeavour to carry out the Provisions of this Act to the fullest extent consistent with the feelings of the ratepayers.

One or two of the speakers had expressed themselves quite in favour of any treatment that might be adopted being compulsory; he must confess that looking at the subject as one necesssarily must quite broadly he was not in favour of carrying any scheme to such an extent as that. So far as he knew those Acts of Parliament of a similar nature to this were largely optional, for instance the Education Act of 1879, was not compulsory as it is to-day, but as a matter of fact the working of it was based upon very similar lines to the intentions of this Act. The feelings and ideas of the people necessarily must be gradually brought into touch, so that compulsion will eventually be made to apply to those who entirely ignore their social duties, in fact, like all other schemes that are intended to fit in and work smoothly it must be regarded as a process of evolution.

So far as the fees or remuneration to which he had referred in his paper are concerned, he merely brought them forward as a matter for discussion, believing that we ought to gradually come to some conclusion with regard to them so that when the time arrives we might have a definite and unanimous opinion expressed.

In reply to the remarks of one of the speakers, Dr. Elliott was strongly against any gratitutious work being undertaken. A great deal of time and labour has been expended in the past by those who are the pioneers of, and who take much interest in school dentistry, and what they have done in the tabulation of statistics will always show in his opinion, how much members of our profession are

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desirous that the public should see how essential it is that the teeth of the children of the nation should receive adequate and proper treatment, but he felt very strongly that the time had now passed for any gratuitous work to be undertaken and that we ought to stand upon our merits, and anything we might undertake should be done consistent with the welfare of the State and with satisfaction to ourselves.

He thanked those who had taken part in the discussion for the observations they had made and was glad to have had an opportunity of bringing before the Society a subject in which he had been interested for a very long time past.

The PRESIDENT said that the provisions now made for the Medical Inspection of School Children opened up an enormous field for work of a far reaching character. Indeed, the Authorities themselves probably hardly realised yet all that it would mean. Under those circumstances too much must not be expected at first, and although treatment must logically follow the Inspection it would be better, probably, not to try and force the hands of either Central or Local Authorities until the results of the Inspections become thoroughly recognised. Speaking generally, he thought that wherever possible both Inspection and any future treatment from the Dental aspect should be in the hands of experts, and so far as the treatment was concerned should be widely distributed amongst those practitioners who might care to take their share in such useful work.

A vote of thanks was accorded to those gentlemen who took part in the discussion, and the Meeting adjourned.

# Dental News.

## DEATH UNDER ETHYL CHLORIDE.

THE tragically sudden death of Mrs. Emma Sharples, 28, wife of William Sharples, the licensee of the Cross Gates Inn, Coke Street, Burnley, was inquired into at the Cleaver Street Police Station by Mr. Hazlewood, the Deputy Coroner.—Mr. J. C. Pollard represented Mr. Barker Crabtree, of 73, Oxford Road.

William Sharples, the licensee of the Cross Gates Inn, gave evidence of identification, and stated that his wife had

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not been a strong woman, but had been able to perform the ordinary household work. On Sunday she commenced to suffer from toothache, and on Wednesday she went to see Mr. Barker Crabtree. She had four or five teeth extracted, and arranged to have others removed on Thursday. She left home about 6 p.m. on Thursday, in company with Clara Holden, for the dentist's. That was the last time he saw her alive.

Mr. Pollard: When she returned on Wednesday you knew she had been under the influence of an anæsthetic?—Yes.

Mr. Pollard: Was she satisfied with the way in which Barker Crabtree performed what he had done?

The Coroner: It stands to reason she was when she went back the next day. The fact speaks for itself.

Mr. Pollard: Was she unwell the next day?—Witness: Well, it was a common thing for her to go to bed in the afternoon because she was not so well.

Clara Holden, wife of a coal miner, living at 35, Finsley Gate, deposed to accompanying the deceased to Mr. Crabtree's place of business. Mrs. Sharples asked the dentist if he could remove her some teeth without hurting her, and he replied in the affirmative. He gave her an anæsthetic, and then extracted four teeth. She came round soon after and seemed fairly well, and then they returned home together. Before leaving they arranged to call again the next night. On Thursday Mrs. Sharples called for her, and they visited Mr. Crabtree, who once more administered an anæsthetic and extracted the other four teeth. Mrs. Sharples never regained consciousness. Mr. Crabtree tried to rouse her, but has efforts being of no avail, he sent for a doctor. Dr. Beggs came, but his efforts also to restore her were unavailing.

The Coroner: On the Wednesday did she express her satisfaction with the way Crabtree had done his work?—Yes, she said she would not be frightened of going again.

Did the dentist try artificial respiration?—No.

He only just shook her?—Yes.

Barker Crabtree, the dentist, was then called into the room, and the Coroner, before administering the oath to him, warned him that any evidence he might give would be taken down and might be given against him at any trial if the jury should see fit for any reason to send him for trial.

After that warning Crabtree elected to give evidence,

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and stated he was an artificial teeth maker. He was not a registered dentist, but had practised as an artificial teeth maker for eight years. As the deceased wanted her teeth extracted without pain he administered ethyl-chloride.

The Coroner: How much did you administer?—Just an ordinary dose.

Yes, what is an ordinary dose? I want to know what you gave in this case. A teaspoonful?—Well, you cannot measure it in a teaspoon. It is in a tube with a stopper on the top.

How much do you think you put in?—Just a nice dose.

A dose might be anything. I want to know what you gave her. What is an ordinary dose?—5 c c.

What does that mean?—I don't know what 5 c c is only what it says on the bottle.

You administered a dose that is known to you as 5 c c?—Yes.

How did you measure it?—I gauged it by counting, as I have got that used to it by using it, but I looked at the bottle to see if it was enough.

How do you know it is enough? Do you judge by the patient's condition?—No, I look at the bottle.

Did you do that in this case?—Yes.

What size of a bottle would it be out of that which administered it?—Crabtree (producing a bottle on which was a graduated label): This is the bottle.

Did you know that the dose for a woman is less than that for a man?—I didn't know particularly that it was that much difference. If they are big, strong women I always give them as much as a man.

Do you tell the jury you did not know there was any difference between the dose for a man and a woman?—I did not know the difference any more than giving a dose to a big, stout woman and a little, thin, weakly woman.

Shall I put it that you didn't know there was any difference in administering it between a man and a strong woman, but you would make a difference between a man and a weakly woman?—Yes.

Did you make any difference in this case?—I didn't give her quite as much.

Did she express herself satisfied before she went away on Wednesday?—She seemed all right. She felt a bit sickly, but attributed it to something she had had to her tea.

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Crabtree deposed to giving the deceased an anæsthetic on Thursday.

The Coroner: You didn't gauge or measure it?—I gauged it by those marks on the label.

Are you quite sure of that?—Yes.

The Foreman: You didn't say that before.

The Coroner: Do you look at the bottle all the time?—I look at the bottle after I have counted so many. I have given it nearly 2,000 times successfully.

How many do you count?—I generally count 15 or 16. I have got that used to counting it that I can gauge it without looking, but I always look at the bottle.

Did you look at the bottle?—Yes.

Is 16 your usual number?—Yes.

After counting 16 you looked at the bottle and considered you had given her sufficient?—Yes.

Whilst she was unconscious Crabtree said he extracted five teeth, two double and three single.

The Coroner: When you found she was not regaining consciousness what did you do?—I sent for the doctor.

Did you do anything before you sent for the doctor?—I tried to rouse her up, the same as I do with every patient.

Did you try artificial respiration?—Nothing only what I've told you.

Do you know how to practise artificial respiration?—No, noa properly.

Are you aware there have been deaths from this cause?—No.

How many times have you administered this ethyl-chloride?—From 20th July, 1905, to March 4th, 1908, 1,654 times, and I have extracted 6,197 teeth, the biggest part of them under that anæsthetic.

Mr. Pollard: During all the cases in which you have extracted teeth after administering this anæsthetic has there ever been an accident before this one?—No.

The Coroner: You've never had a fatal accident before?—No, and I don't want another either.

Mr. Pollard: Have you ever sent for a doctor before for a patient who did not come round in the time they ought to do?—No, I have never had a hitch of any kind.

How long does a patient remain unconscious under the anæsthetic?—Never more than half a minute.

Have you ever heard of a death taking place from an

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anæsthetic having been administered?—I have heard of other cases, but I have never had one.

The Foreman: Are we to understand that you are not a registered dentist, that you are an unqualified dentist?—Yes.

Can we see you pour a dose of this out and count?

Mr. Pollard objected to such an examination.

The Coroner thought it was hardly fair to ask the witness to make such a test, as under the circumstances he might be nervous and not do it like he would under ordinary conditions.

Witness, answering a juror, said he generally asked patients a lot of questions about their health, and had a right good look at them as to their bodily condition. He also asked if they had anything of the kind before.

A Juror: Is it a usual thing to do it two days in succession?—Oh, yes.

The Foreman: Didn't you tell us in the first instance that you gave an ordinary dose?—Yes, an ordinary dose.

Yes, and haven't you told us since that you made an allowance?—I gave what is an ordinary dose, but I generally count one less.

A Juror: Are you allowed to give this?—Just the same as any other unregistered man.

You are not supposed to give this to anyone unless there is a doctor there?

Another Juror: That is not the law.

The Coroner: It does not go that far.

Another Juror: Is this stuff issued to any man who cares to purchase it, irrespective of knowledge?

The Foreman: Yes, if you sign for it.

The Juror: You don't know the strength of the contents and anything of that kind?—No, only by 5 c c.

You know just as much as I do about that bottle?—I don't know what it contains more than you do only that it contains ethyl-chloride.

A Juror: I think you should have a knowledge of the persons to whom you administer it.—Witness: I have refused scores.

Another Juror: You don't give it everybody who comes?—Fo, I use my best judgment, and always have done.

A Juror: What would disqualify a person having it?—Well, you can generally tell by their looks and what they

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say. I don't put a sounding trumpet to their hearts or anything of that sort, but I generally ask them if they have had any heart trouble and how they feel. If they are troubled with heart disease I refuse them.

A Juror: Is the uniform strength of the liquid guaranteed to you?—By the makers.

Is there a book of instructions with it?—No.

It will be supplied to properly qualified dentists?—They all use it.

An unqualified dentist has to find out how to use it, is that so?—They get some knowledge from the person who learns them and from the dental books as well.

By another Juror: There was no chance of the liquid coming out faster at one time than another.

The Juror: I was only wondering whether he could give an overdose whilst he was counting.

Dr. Watson, who made a post mortem examination, reported that the condition of the heart and lungs was normal. The blood was very fluid and of a purple hue, so much so that he thought it better to have it examined by the public analyst. The liver was normal, but the kidneys were congested Death took place from heart failure whilst under the influence of an anæsthetic. The chief authorities on anæsthetics considered ethyl-chloride a dangerous anæsthetic, and there had been 22 fatal cases in fairly recent times, eight being dental cases. Ethyl-chloride was a dangerous anæsthetic in unskilled hands.

The Coroner: There is nothing to prevent any unregistered man administering it?—No, but it is a public danger.

A man does not offend any statute of the law by giving it?—Not unless you can prove he has done it carelessly.

The doctor added that the anæsthetic was not as safe as it was thought.

Crabtree asked a question, and the doctor replied: You would not give a person chloroform?—Crabtree: No.

The Doctor: Ethyl-chloride is almost as dangerous.

Answering Mr. Pollard, the doctor stated that Crabtree having administered anæsthetics so often must have given him some experience in administering anæsthetics, but he certainly has no right to administer an anæsthetic before he knew the condition of his patient.

Mr. Pollard: Would you say he had been guilty of an

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error of judgment in having administered that anæsthetic?—No. I cannot say that he would know her condition, because she was a healthy woman.

Probably a medical man might, under the condition you found, have advised that it was a proper thing to administer an anæsthetic to the deceased?—Yes, he might have found it was a proper thing to administer an anæsthetic.

Answering Mr. Pollard further, the doctor stated that ethyl-chloride was formerly thought a lot of, but latterly it was being condemned. It had come into use among dentists because it was much more convenient to use than gas.

This concluded the evidence, and

The Coroner stated the facts were not disputed. There was no doubt that the poor unfortunate woman had died from heart failure whilst under the influence of the anæsthetic, but so far as Crabtree was concerned he could not find out that there was any liability. Merely administering the anæsthetic did not carry any liability with it unless at the time of administering it Crabtree was guilty of some gross negligence or carelessness which caused the woman's death from an over-dose. If the jury were satisfied that he did what he generally did, the administration of an anæsthetic for the purpose of enabling him to extract teeth without trouble and pain to the persons who had teeth extracted, they would say so by a verdict of "accidental death." But if they had substantial reasons to think there was gross negligence in administering the anæsthetic they would say so, and it would amount to a verdict of manslaughter against him. Whether there should be some alteration in the law to prevent people who extracted teeth from administering anæsthetics was not a matter they had to consider; they were there merely to enquire the cause of the death of the woman. At the same time, if the jury returned a verdict of accidental death he hoped it would be a very good warning to Crabtree. He would advise him, after what the doctor had said, to see if he could not find some other way than the administering of ethyl-chloride.

Crabtree: Which is the most dangerous—gas or ethyl-chloride?

Dr. Watson: Ethyl-chloride.

Has anybody died from gas?—Yes.

The Coroner: We are not here to argue which is the most dangerous.

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The jury were 15 minutes in private considering their verdict, and then they returned a verdict of "Accidental death."

Crabtree was told by the Coroner that the jury hoped it might be worth his while to take into consideration the use of some other form of anæsthetic.

Crabtree: I wish——

The Coroner: We will not enter into a discussion. I have put the jury's views before you, and the inquest is now closed.

## DENTAL HOSPITAL OF IRELAND.

The annual meeting of the Governors and supporters of the Incorporated Dental Hospital of Ireland was held in that institution, in Lincoln-place, Dublin. Mr. A. C. Stubb, M.A., presided

The Hon. Sec., Mr. G. M. P. Murray, read the general report, which stated that the record of work done by the Incorporated Dental Hospital in Ireland continued to show a steady advance. The dispensary cases (advice and ordinary extractions) amounted to 13,012. In the general cash account the receipts from subscriptions and pay patients showed a satisfactory advance, while the disbursements remained practically stationary. The account of the Prosthetic Department, including pupils' fees showed a very satisfactory increase, leaving to credit a substantial balance of £695 4s. 7d. Recognising that the working of the institution was greatly handicapped by the cramped and inadequate space the Board was of opinion that the time had come when an effort should be made to extend the premises, and confidently appealed to the public to place in its hands the means of carrying out that object. The school report stated that since the commencement of the session in October, 32 students had been entered on the books; 11 of these were senior students and nine were junior in the conservation room, while twelve students had joined the mechanical laboratory. The work done by their students during the past session as evidenced by the examinations, had been thoroughly satisfactory, and the answering quite up to the average

The reports were adopted, and a resolution commending the hospital to the public as deserving of increased financial support.

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# Legal.

## COCAINE CASE: COMMITTAL.

ISIDORE ZEIFERT, 33, a Russian druggist, of Broad-street, Golden-square, W., surrendered to his bail, before Mr. Denman, to answer the remanded charge of having caused the death of Mrs. Jane Farvish, of Church-street, Soho, by administering cocaine to her. Mr. Rowe prosecuted on behalf of the treasury, and Mr. Barrington Matthews appeared for the defence.

On January 18th, Mrs. Farvish went to the shop of Zeifert to have some teeth extracted, and he injected some cocaine into the gum to deaden the pain. She fainted, and in spite of all efforts to save her, died. Mr. Rowe mentioned that there was no desire to unduly press the charge.

Medical evidence as to the uses of cocaine were given by Dr. Dunn, Police Surgeon, and Dr. Freyberger, the latter mentioning that the post-mortem examination showed that the deceased had a diseased heart.

Mr. Barrington Matthews submitted no prima facie case had been made out against the prisoner, and that on a point of law the charge must fail.

Mr. Denman committed the accused, who pleaded not guilty, and reserved his defence, for trial, which took place before Mr. Justice Bucknill, at the Central Criminal Court. Mr. A. Gill and Mr. Leonard Kershaw prosecuted for the treasury; Mr. George Elliott defended.

Zeifert carried on business under the style of the Soho Drug Stores, and though possessing no qualifications in this country, advertised that "teeth were extracted."

Mr. Gill said Mrs. Farvish went with her husband to the prisoner's shop to have two teeth extracted. Consent was given to the administration of cocaine, and after the operation deceased became rigid and fell into convulsions. Zeifert seeing the patient's condition, sent for a doctor, who found her dead. A post-mortem revealed the fact that the woman suffered from heart disease. In the opinion of the medical men half a grain of cocaine in 10 minims of water administered in such circumstances was, if not a fatal dose, a highly dangerous one.

Defendant, it was alleged, was warned that the patient

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was weak, and the case for the prosecution was that in not having had proper medical advice before the administration of the cocaine the defendant had been guilty of that culpable negligence which, in the eye of the law, amounted to the crime of manslaughter.

Mr. Elliott said his case was that the defendant gave half a grain of cocaine in sixty minims of water.

The Judge: That is not the point. No one is always wise. A man professing that he has the necessary skill to do that for which he is going to be paid should possess that skill, and if proved to be guilty of culpable negligence he was amenable to the law.

Dr. Freyberger, the L.C.C. pathologist, who made a post-mortem examination of the body, said, having regard to the condition of the woman's heart, the administration of cocaine was highly dangerous. The condition of her heart might have been discovered by medical examination.

In reply to the Judge, Dr. Freyberger said that cocaine was a dangerous drug, and in his opinion ought not to be used at all in the extraction of teeth.

Counsel, in defence, asked the jury to say that the prosecution had failed to establish the fact that the prisoner had been guilty of that culpable negligence which made him amenable to the law.

The Judge said before they convicted the prisoner of manslaughter they must be satisfied that the prisoner had been guilty of reckless, culpable and criminal negligence.

The jury, without hesitation, found the prisoner not guilty.

The Judge said he quite concurred in the verdict, but he hoped the prisoner would be wiser in the future with the knowledge he now had of cocaine.

## ALLEGED BREACH OF CONTRACT.

In Belfast Recorder's Court there was an action brought by William and Mary Stranix against Samuel Black, dentist, of 67, Waverly Terrace, Agnes Street, to recover the sum of £2 damages for breach of contract.

Mr. William Tughan appeared for the plaintiff, and Mr. T. Louden (instructed by Mr. Edward Cooksey) defended.

Mr. Tughan stated that the defendant agreed to make

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plaintiff a set of teeth for the sum of £3. A deposit of 10s. was paid, and if the teeth were satisfactory the balance was to be paid in instalments of 10s. monthly. When plaintiff went for the teeth defendant refused to give them unless he got £4 for them, and that he must have the balance before he supplied the teeth.

Plaintiff was examined, and stated that defendant agreed to supply her with a set of artificial teeth for £3. She was to pay 10s. on account, and 10s. per month until the balance was paid off.

Mr. Tughan: That was artificial teeth on the instalment system.

Witness, continuing, stated that when she went for the teeth defendant refused to give them unless he got £4.

Mr. Louden stated that the defendant agreed to supply the teeth for £4, a sum of 10s. to be paid on account, and the balance before she got delivery of the teeth.

Defendant, in reply to Mr. Louden, stated that the agreement with the plaintiff was that he was to supply her with a set of teeth for a sum of £4. A sum of 10s. was paid on deposit.

His Honour suggested that the sum paid on deposit should be refunded, and the suggestion was acted on.

The case was accordingly struck out.

# Obituary.

## DEATH OF MR. W. H. HOPE, L.D.S.

WELLINGBOROUGH is mourning the loss of an honoured resident in the person of Mr. William Hodgskin Hope. Not only Wellingborough will feel that loss, but throughout a large part of the the county there will be regret felt at the demise of one who was known more or less closely in many circles over a wide area. It was not alone in his professional capacity that he was known over such a large district, but in his favourite rôle of amateur entertainer at concerts, bazaars, and, indeed, almost all kinds of functions promoted for charitable or philanthropic objects. There is probably no other man in the county who during the last quarter of a century has given his services more frequently at public

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entertainments than Mr. Hope did, and those services were at the disposal of all sects and parties without distinction so long as the object for which they were required was a worthy one. But though Mr. Hope was the most widely known in his capacity as a clever and versatile amateur entertainer, he also fulfilled the part of a useful public citizen, and for this, as well as for his many personal good qualities, he was held in the highest respect by all classes of the inhabitants, and his demise in what is ordinarily regarded as the prime of life has caused heartfelt sorrow. Mr. Hope was under the care of Dr. Hollis and Dr. Audland, and some time after the nature of his ailment was known he was removed to London, where he underwent operation and treatment at the hands of a specialist. The period he spent in London was an anxious one for his friends, as complications ensued, and his life was despaired of, but eventually he recovered sufficiently to be able to get back to Wellingborough where he passed away.

# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

No notice taken of Anonymous Communications. Name and address must always be given, although not necessarily for publication.

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# THE TEETH OF FOSSIL FISHES*.

By John Humphreys, M.D.S.Birm., L.D.S., F.L.S.

The teeth of fossil fishes are indestructible, and their structure can be almost as clearly demonstrated as those of fishes of the present day, although they were buried in the mud of primæval oceans, in ages so remote as only to be reckoned by æons of time. Since then, their organic constituents have entirely disappeared, and the teeth have been fossilised into rock as hard as the matrix in which they are embedded.

Among the higher Mammals dentine is of a simple character—hard or orthodentine, and a section of such a tooth discloses a central pulp-chamber, surrounded by its system of dentinal tubes; but as we descend the scale to lower types we shall see the structure considerably altered, and more complex in every way, from the greater vascularity of the tissue.

In Edentates we find the teeth of the sloths are formed of a dentine permeated by vascular canals, hence termed vaso-dentine. The megatherium, the gigantic extinct sloth of South America, exhibits this variety very clearly, in which

* Transactions of the Royal Society of Medicine, Odontological Section.



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the dentine and the cementum also were rich in looped blood-vessels which traversed the structures.

The teeth of the manatee possess similar characteristics, and in the singular ant-eater of the Cape, the orycteropus or aardvark, we see a still more complex form, in which the central pulp has broken up into a number of smaller branches, each giving off its system of dentinal tubes, thus producing a pattern bewildering in its complexity.

In Reptiles exactly the same condition of things is noticed. The snake and crocodile possess teeth of hard or unvascular dentine, but the further we go back in geological time the more complicated we shall find the dentine, and more richly vascular.

The simpler form of plicidentine is shown in a section of the tooth of ichthyosaurus, the outer surface being wrinkled by flutings; the blades of pulp, being squeezed laterally, are prolonged into the undulations, each blade giving off its system of dentinal tubes. If, however, we descend to the Carboniferous system, and examine the teeth of the archaic batrachians, the Labyrinthodonts, we shall discover, as the name denotes, the most singular and puzzling form of tooth substance known to us.

The central pulp-chamber, as in ichthyosaurus, gives off lateral arms or branches; but, instead of travelling straight to the periphery, each blade pursues a tortuous course, which adds greatly to the perplexity of the structure. The higher fishes illustrate this rule. Many of the osseous fish are furnished with teeth in which hard dentine, or osteo-dentine, plays an important part. Such are shown in the large conical teeth anchylosed to the sides of the lower jaw of the pike, upon which its prey is impaled when first seized, and by the strong teeth which arm the mouth of the angler fish. It is true that we have in the Cod family—as the hake, ling

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and cod—teeth which are eminently vascular, those of the hake being quite pink when alive, from the red blood circulating in loops throughout the calcified matrix. But in the more primitive group of Palæichthyes a complex form of structure still holds good.

The dawn of vertebrate life on this planet is being constantly pushed further and further back into the very remote periods of geological time. The scientific world was much exercised when Hugh Miller and Murchison published their discoveries half a century ago in reference to enormous varieties of fish-remains in strata as ancient as the Old Red Sandstone. The cutting of the Malvern and Hereford Railway disclosed the passage-beds tilted on end near Ledbury Station, rich in archaic fossil fishes; and the horizon was further carried into the Silurian system, to the fish-bed of the Upper Ludlow Series, only a few inches in thickness, but rich in remains of scales and teeth of small elasmobranch fishes, ancestors of the sharks and rays. Professor Lapworth tells us that the bed may be traced at intervals for more than a thousand miles, and only recently our knowledge has been enriched by Dr. Traquair's discoveries in Scotland in the Downtonian Beds, which there extended to several hundred feet in thickness, revealing the forms of the same small and singular creatures whose teeth and spines are agglomerated in the Ludlow Fish-beds, and which are, up to the present, the most ancient fish forms known. Their bodies were protected by enamelled spines and scales, constituting a shagreen similar to the covering of the modern dog-fish.

A study of the dental apparatus of the modern sharks and rays will enable us to understand the fossil teeth which abound in the Palæozoic and Mesozoic rocks. The jaws of the sharks are cartilaginous, with an outer slightly ossified crust. The teeth are extremely numerous, arranged in several

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rows one behind the other ; they are not fixed in sockets or anchylosed, but united simply to the dense fibrous membrane which covers the jaws. One row of teeth stands upright ; the reserve teeth lie in a recumbent fashion, protected by a flap of mucous membrane, and assume an erect position when the older teeth are lost. The dentition of the rays is similar; the teeth form a pavement similar to a Roman mosaic, and cover closely the dentigerous surface of the jaws. The modern rays are small and insignificant in comparision with their fellows of the Cretaceous period, such as the ptychodus, whose teeth I shall show you later on. Being produced in endless numbers and speedily lost by reason of their slight attachment, the teeth of sharks and rays are extensively found in marine geological strata, and in their attachment and mode of development they have been unaffected from an evolutionary point of view all through the stages of geological history.

The Old Red Sandstone is extremely rich in fantastically formed fishes, suggesting almost a "'prentice hand" trial by Nature, so singular, grotesque and inelegant are the forms which have been brought to light, and which are arranged in a group—the Ostracodermi. Their bodies were protected either by bony plates, or an armour of scales, or enamelled scutes, which, fitting closely, formed an efficient protection from their enemies. Some, as the pterichthys, the coccosteus and bothriolepis, have the body enclosed in tightly-fitting plates, like the shell of a tortoise, and were propelled by oar-like appendages, and steered by the flexible tail as a rudder ; others, as the cephalaspis, had the head enclosed in one great buckler plate, while the body was encircled by lateral plates. Pteraspis had the head surrounded with powerful bony plates, and the hinder part of the body by ganoid enamelled scales. These fishes, according to Professor Lapworth, "are usually regarded as primitive ganoids." They are cartilagin-

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ous in structure, like the sharks and rays, possessing no bony skeleton, and they were distinguished, like the ganoids which succeeded them, by tails which were either "diphycercal" —that is, the termination of the vertebral column was surrounded by the caudel fin—or "heterocercal" where the column is prolonged into the upper bifurcation of the tail, which is unequally divided, the lower lobe being the smaller, thus differing from the osseous fish, where the tail is always "homoceocal" or equally divided. The structure of the teeth was extremely beautiful, a transverse section of Dendrodus revealing a maze of pulp sinuosities comparable to branching trees, which suggested the name, the main stem and arms developing anastomosing dentinal systems of complex ramifications.

The Carboniferous Limestone contains numerous examples of the teeth of primitive sharks which abounded in the seas of that period. We possess in the *Cestracion Philippi*—the Port Jackson shark of the Australian seas—one of the few representatives of this once numerous family, whose dentition enables us to understand clearly the tooth forms of the Carboniferous rocks. The largest cestraciont sharks do not now exceed five feet in length, dwindled and insignificant indeed in comparison with the monsters which dominated the oceans of the distant past when our Coal Measures were being laid. The teeth of cestration are fixed to a dense fibrous gum, as in other sharks, and are lost and replaced by reserve rows, as in ordinary selachians ; but the teeth in front of the mouth are small and pointed, while the back of the jaw is furnished with rounded molariform teeth, an admirable adaptation for their peculiar diet, which consists of crustaceans and hard-shelled creatures, which are seized by the pointed teeth and crushed by the powerful molariform ones. Orodus, judging by the size of its teeth, was probably the

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most gigantic cestraciont shark which has ever lived. The specimen before you measures four inches in length, and was found in the Cheshire Limestone; others have been frequently discovered in beds of the same age in Ireland, and also at Bristol. A powerful cone occupies the centre of the tooth, supported by transverse rugæ or wrinklings, which are separated by grooved furrows, their roughened surfaces rendering them peculiarly fitted for gripping and crushing shell-fish and crustaceans. The structure shows the well-known plicidentine character of teeth of early fishes; long channels of pulp, running parallel to the surface of the crown, give off their systems of delicate tubes, which are specially evident in a transverse section, where the alternate pulp-chambers, ramifying tubes, and calcified matrix form a distinctive and beautiful pattern.

Sections of other Carboniferous cestracionts demonstrate the same structural features, as seen in the psammodus, helodus and psephodus. In the Coal Measures themselves we frequently find the bifurcated teeth of diplodus, which at first sight suggest a predatory shark, but they are evidently the teeth for prehension, of a cestraciont fish, similar to those in front of the jaws of the Port Jackson shark. In the later rocks of the Jurassic system we have excellent examples of the prevalence of this type of fishes, as in hybodus of the Lias, where the teeth are ridged somewhat like those of orodus, and the plicidentine is well marked, the outer border exhibiting richly tubular enamel.

Acrodos, from the Lias of Lyme Regis, shows a number of delicate groovings upon the masticating surface of the tooth, giving it the appearance of a fossil leech; while the strophodus bears a strong resemblance to the molariform pavement of *Cestracion Philippi* in the rounded plate-like teeth; both are excellent examples of richly vascular den-

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tine and form very beautiful microscopic sections, showing the pulp canals, dentinal tubes, and matrix, as clearly as in a modern tooth.

The Chimæras, a sub-class of the Elasmobranchii, made their first appearance in the Jurassic times, and differ remarkably from the sharks in their dental arrangements, as, instead of possessing detachable teeth, the jaws are furnished with dentigerous plates, which are never lost; four occur in the upper and two in the lower jaw. The true tooth character is made evident by a section, where, as in ischyodus from the Stonesfield Slate, and edaphodon from Eocene and Miocene rocks, we see the dental structure.

The ancestors of the Ray family are seen as low down as the Carboniferous Measures, but they attained their maximum development in Cretaceous times, the teeth of ptychodus indicating a fish of gigantic proportions. They are extremely beautiful in shape and structure, the surface of each tooth being roughened by sharp ridges and sinuous grooves, the circumference covered with minute rounded cusps to enable the creature to effectually grip and clutch its prey. A horizontal section shows the pulp canals more numerous, and dentinal tubes finer, than in earlier specimens.

In early Tertiary measures we find the first appearance of the singular rays, myliobates aetobates, where Nature has substituted dental plates for teeth. In the modern myliobates both jaws are covered with such plates, forming a dentigerous pavement, admirably suited for crushing shell-fish; the plates fit closely together, each consisting of comb-like denticles on the under surface, which become fused into a dense, smooth, polished upper surface, attached to a fibrous gum only. Myliobates was very widely distributed, fossil specimens being found in Eocene and Miocene measures in many parts of the world.

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So far we have been discussing the varieties of dentitions of fossil cestraciont sharks and rays, and now we have to return to Carboniferous Measures to denote the advent of higher forms of fish which bear a certain resemblance at first sight to osseous fish of recent times. We noticed in the Old Red Sandstone the archaic forms and armoured bodies of the group Ostracodermi ; these, in the Coal period, were followed by ganoid fishes, whose bodies were enclosed in accurately-fitting enamelled scales, but possessed no ossified skeleton. We have a few illustrations still surviving of this rapidly disappearing class, which figured so largely in Mesozoic times, in the sturgeon and lepidosteus, or bony pike, of North America. Unlike the Palæichthyes, the teeth were anchylosed to bony jaws, and indicate by their shape their predatory character.

We have illustrations in rhizodus of the immense size of its jaws and teeth, which probably represent the most gigantic fishes, apart from the sharks, which have ever inhabited the seas ; a comparison with the jaws and teeth of the modern lepidosteus suggesting the difference in their dimensions. The teeth are conical, compressed laterally, the anterior and posterior surfaces developed into sharp ridges with a knife-like edge, the lower part grooved, indicating a teeth of powerful trenchant character. My specimens measure 3½ inches in length, and 1¾ inches in breadth, but they are small in comparison with some in the Royal Society of Edinburgh, were a fragment of the jaw, 18½ inches long, is furnished with teeth measuring 5 inches from base to point, and the scales which protected its body were 5 inches in length. Well might Agassiz describe it as "the largest of osseous fishes!" In one of my specimens you will notice two enormous teeth standing side by side, which armed the front of the lower jaw as teeth of prehension, reminding one

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of the canine tusks of the Carnivora, and we can well imagine that rhizodus was the terror of the Carboniferous seas. In no other geological period have we evidence of such extensive and varied fish life, and it is singular that the Cestraciont sharks and the ganoid fishes attained in those measures their maximum development at a period so early in the world's history.

Megalichthys was a companion fish of huge dimensions, as its name implies. The teeth were more attenuated than in rhizodus, but similarly fluted at the base; they are found in the Carboniferous Limestone and the Coal Measures proper. The open coal workings at Tipton have furnished great numbers of its teeth, the structure of which, as in rhizodus, was a rich plicidentine.

Through the various stages of the Jurassic deposits we find interesting varieties of ganoid fish and their dental apparatus, of which we may take lepidotus as a type. All the specimens which I am about to show you had the same habits, their diet consisting of shell-fishes and crustaceans, for crushing which the powerful teeth which covered their palates were well adapted. In lepidotus they were rounded and berry-like, with a point occasionally upon the upper surface, hollow inside. The teeth of sphærodus, from the Greensand, are similar, having the appearance, when inverted, of acorn cusps; the successional teeth, which are numerous, when erupting, turn over at an angle of 180°. Pycnodus, phyllodus, pisodus, mesodon and microdon exhibit admirably the arrangement of the teeth, which were anchylosed to the bones, varying in shape and size, but all admirably fitted for the work they had to perform.

The palatal teeth of gyrodus, from the Kimmeridge Clay, are very beautiful examples of crushing teeth, each being furrowed with a deep groove, to roughen the surface and in-

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crease the gripping power. In structure the Jurassic ganoids exhibit a decided advance upon their Carboniferous predecessors, a hard dentine with ramifying tubes, developed from one central pulp-chamber, having taken the place of the vascular teeth of earlier fishes. The enamel is very puzzling, the inner third, as in sphærodus and lepidotus, being penetrated by tubes which cross one another in an aimless fashion.

I must not omit to say that in Triassic measures we have the first appearance of the dipnoi or mud-fishes, whose representatives still exist in the ceratodus of the Queensland rivers and the lepidosiren of Western Africa. The mud-fishes are furnished with lungs and gills, to enable them to live either in the water, or, when the rivers run low and dry up in the summer months, to exist in the hardened mud by means of their lungs. The curious dental plates which have been found so frequently in the Triassic and Rhætic beds have long puzzled anatomists, but their true character was demonstrated by the discovery of ceratodus in Queensland, about the year 1870, when its singular dental apparatus afforded a clue to the earlier fossil forms.

In both the upper and lower jaws of ceratodus the bones themselves are serrated and glazed with a course enamel, the plates in the lower jaw articulating with those of the upper. That the bone itself comes into play for dental purposes is a very extraordinary occurrence, and it is phenomenal to find the tissues strengthened and protected by enamelling.

The predatory sharks came into existence in Upper Cretaceous measures, of which we have illustrations in *Otodus obliquus*, *Corax falcatus* and *Odontaspis elegans*, while the Red Crag furnishes us with the the triple-cusped tooth of notidanus, and the simple but powerful tooth of oxyrhina.

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They all present the same appearance of a plicidentine character.

In *Otodus appendiculatus*, from the Cambridge Greensand, the channels of pulp are extremely numerous, and the dentinal systems naturally more contracted and stunted; but the enamel is penetrated by a system of tubes, very wide, with large open mouths where they enter from the dentine, branching into meshwork for a third of their length, and then tapering finally towards the periphery of the enamel.

*Odontaspis elegans*, from Upper Cretaceous measures, shows a tooth of similar structure. The channels of pulp towards the surface are long and attenuated, and the enamel is penetrated with tubes from the *outer* surface.

Oxyrhina, a Miocene shark, shows a very beautiful vascular structure in the dentine. The fine tubes cross one another in a perfect maze, and the enamel is penetrated by a double system of tubes, from within, on the dental surface, where they branch into fine rootlets when they have traversed a third of the enamel; and from without, where they run in straight tubes from the surface of the enamel. Just beneath the enamel is a line of interglobular spaces, bearing some resemblance to the granular layer in human dentine.

The predatory sharks attained their greatest development in Miocene times, where the carcharodon dominated the Tertiary oceans, a creature, judging by the size of its teeth which must have equalled a whale in proportions. Some of my specimens measure five inches in length by four in breadth, and are found in all parts of the world—in New Zealand, Australia, South Carolina, the Bermudas, and the Continent of Europe, besides our own Suffolk Red Crag, showing the extent of its world-wide distribution. Its teeth present an

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instructive illustration of tubular enamel; the tubes, entering from the dentine by wide open mouths, run in straight lines to the enamel surface, and they are continued right across, in a similar fashion to the tubes in marsupial enamel. The dental structure of modern sharks is one of osteo-dentine, graduating into fine tubed dentine on the surface of the tooth.

The osseous fishes, with truly ossified skeletons, like the fishes of the present day, made their appearance in Cretaceous times, but the specimens I possess are too few to describe their structure.

A few conclusions may be arrived at from the study of Fossil Fishes;

(1) The very early appearance of fishes in geological time, in ages as remote as the Upper Silurian measures.

(2) The apparently sudden appearance of cestracionts and ganoid fishes of gigantic size, which attained their maximum development in Carboniferous seas.

(3) The rays, though contemporary with cestracionts in Carboniferous time, did not attain their maximum proportions until the Cretaceous period.

(4) Predatory sharks appeared first in the Upper Chalk, attaining their greatest size in the Tertiary.

(5) The remarkable continuity of species, as evidenced by the persistence of cestracionts, from the Carboniferous measures to the modern Port Jackson shark of the Australian seas, and of ceratodus, from the Trias, to the present time.

(6) The earlier forms of fishes show a dental structure richly vascular, or plicidentine. The more archaic the form and remote the period, the greater the complexity of the tissue.

(7) The extraordinary variety of arrangements pro-

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vided by Nature in fishes for the prehension and comminution of food, as illustrated by the molariform hinder teeth in the jaws of the Port Jackson shark; by the dental pavements of myliobates and aetobates, the dentigerous jaws of edaphodon, the various and beautiful palatal teeth for crushing shell-fish, as seen in gyrodus, sphærodus, lepidotus and ptychodus; and, lastly, by the enamelled bony plates of ceratodus.

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## TOOTHACHE IN COAL MINES

From a Correspondent.

The men employed in the coal mines in England are perfect martyrs to toothache, due to the rapid alternations of temperatures to which they are subject, and also attributable to the nature of the food they live on, for the palmy days when miners earned big wages, and lived, for the brief spell of their working career, on the fat of the land are now past, and the wages earned to-day necessitate the strictest economy. The men bear the pain in the same stolid way in which they endure the other miseries to which they seemed doomed from their birth. They have their own special remedies, many of their own concoction, and on a Sunday night in the ale-house, or on a fine Sunday when seated outside their cottage doors, they may be heard arguing together as to the merits of the respective cures. Some of these remedies have been handed down from father to son, and the association attached to them makes them trebly valuable in their owner's eyes. One remedy is to get a small piece of gutta-percha, warm it, and place it in the tooth and then "ram it down," another pins his faith to coal dust and vinegar made into a paste, whilst others have equally extraordinary ideas.

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In many of the mining villages the sale of spirituous liquors is prohibited, malt liquors only being obtainable. Spirits are popularly supposed to be "good for toothache," and many a man makes this an excuse for a visit to the nearest village where they can be obtained. The saying "He's gone to get some brandy for the toothache," which has arisen from this habit is never taken literally, but simply as signifying that the person in question has gone to the "town," as the villages are generally termed.

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## TOXIC EFFECT OF PETROL FUMES*.

By C. S. Tomes, F.R.S.

The attribution by Sir William Gowers of a case of nervous disorder to the inhalation of petrol fumes is opportune, inasmuch as much investigation of the products of combustion in motor engines is being carried on at the present time. But there are some statements in the article which appear to require some qualification, since they are not quite in accord with recent observations.

Sir William Gowers is inclined to attribute the symptoms to the continued inhalation of carbonic oxide, but admits that, if so, the particular patient probably showed special susceptibility. Now the discovery that carbonic oxide was of quite frequent occurrence in the exhaust gases is somewhat recent, and has hardly penetrated as yet to the ordinary garage. In a large country garage, where not only are cars being temporarily housed but repair work is carried on, a number of motors come in and go out every day under their own power, and the running of engines under adjustment is of very frequent occurrence in an enclosed space. There being as yet no general knowledge that a poisonous constituent may

* Published in the British Medical Journal.

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be, and in an engine in need of adjustment almost certainly is, present, no particular precautions are taken to avoid breathing it, nor even much precaution as to general ventilation; yet inquiries made at this large garage failed to show that the workmen were otherwise than exceedingly healthy, and even somewhat leading questions failed to elicit evidence that anything like obvious slight carbonic oxide poisoning had been met with there. For what it is worth, the conclusion might be drawn that the inhalation of carbonic oxide in small quantities and well diluted does not, in most people, produce any obvious effect, for from what is now known it is perfectly certain that workers upon engines out of order must have, in a vast number of cases, breathed some carbonic oxide repeatedly.

Further, it must not be supposed that the formation of carbonic oxide is a necessary accompaniment of an engine working at full power, as would seem to be implied in the article. On the contrary, the investigations of Professor Hopkinson have proved that when an engine is working at its best efficiency there is none, or practically none. If the results are plotted in curves, as the carbonic oxide curve rises the efficiency curve falls; carbonic oxide is an evidence of imperfect combustion calling for remedy, and, now that its significance is recognised, it will be remedied more and more.

That alcohol burned under similar circumstances—that is, in an explosion engine—would yield a harmless exhaust, even when badly burnt, may be true, but there is no evidence whatever that it would. The combustion of a hydrocarbon like petrol is not quite fully understood. The old idea, to which some still lean, was that there was a preliminary decomposition of the hydrocarbon, and that the hydrogen was burnt preferentially, the carbon following later. Subsequently the theory that hydroxyl compounds were formed as an intermediate stage was advanced. If this idea, which has lately been revived, be correct, there seems no reason why a hydroxyl, like alcohol, should be-

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have any better than a hydrocarbon when its combustion is not perfect.

However this may be, it is the fact that with proper adjustments petrol can be burnt in a motor engine without carbonic oxide (except the merest trace) occurring in the exhaust. On the other hand, with things in very bad adjustment, carbonic oxide may be present to the extent of 10 per cent. of the exhaust gases, the water vapour formed being left out of this calculation, and only the nitrogen and carbonic acid estimated.

As bearing on the feasibility of remedy, a purchaser recently specified that a new car was not to show more than a certain very small percentage of carbonic oxide in the exhaust; when delivered it showed a greater proportion, and was returned to the makers, who in a few days were able to send it back adjusted so as to satisfy the requirement.

Methane occurs in crude petroleum, and its presence in an exhaust is not proof that it was formed in the process of combustion; it may have existed dissolved in the petrol, and escaped being burnt, for—and this is very surprising—free hydrogen has been sometimes found unburnt in the exhaust gases.

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How They Do It in Canada.—"W. A. Bell, 486, Markham Street, Toronto, was fined 20 dollars and costs for acting as a dentist without being a licentiate of the Royal College of Dental Surgeons. Mr. East appeared for Bell and pleaded guilty, asking that the costs be remitted. 'No; this is the third case, and he has had an example of what happened to the others. Its 20 dollars and costs' said the magistrate." —*Toronto Telegram.*

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British Journal of Dental Science.

LONDON, APRIL 1, 1908.

## TITLE IN GERMANY.

A CASE has recently been decided in the High Court of Appeal in Germany on the subject of alien dental degrees. The prosecution was instituted against certain dentists who advertised themselves as Doctors of Dental Surgery of Chicago and Philadelphia, and also as "Zahnarzt." "Zahnarzt" is the title of the legally qualified dental surgeon, and is the hall-mark of the registered man as "dentist" or "dental surgeon" is with us. Also, as with us, the "title" is he only privilege granted to the registered man, with the exception of being able—as with us—to sue for fees. The court ruled that the defendants were at fault in using the word "Zahnarzt" but that they were within their rights in calling themselves D.D.S. The reasons given are not very flattering to the American graduates, as the Court implied that the latter were more on a par with the German "Zahntechniker," or dental mechanic, and "did not enjoy the same preliminary education required from students of dentistry in Germany" but rather that "the title relates solely to the technical instruction of the bearer, which in this respect is the equal of the German."

This decision seems to give a status to alien diplomas in Germany and would probably be as applicable to the L.D.S. as to the D.D.S., but it leaves the German State "title" unassailed—for what that is worth—probably as much there as ours is here. "Title" both for the dentist and the doctor is all that the law protects. As regards medicine *The Lancet* says: "In Germany anybody may practise medicine with-



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out possessing a legal qualification provided that he avoids assuming a title equivalent or similar to the titles of duly qualified medical practitioners. The consequence of this state of matters, which has existed since 1869, has been an unlimited increase of quacks of every kind whose advertisements fill many columns of the daily and weekly newspapers. Many attempts have been made by the representatives of the medical profession to induce the Government to change the present legislation, but all their efforts have been unavailing; it was said in the Parliamentary debates on this subject that the German public was intelligent enough to distinguish between qualified and unqualified medical men and that if people preferred to be treated by quacks it was their own business.

"The persistent efforts of the medical profession, and especially of the Society for the Prevention of Quackery, have gradually succeeded in convincing the Government and the general public that medical quackery is a social danger, and the Government has accordingly at last introduced a Bill directed against quackery and against the sale of medicines of undisclosed composition. The Bill, however, does not do away completely with unqualified practice; it even gives some legal recognition to unqualified practitioners as a class by providing that they must register their addresses at the offices of the local authority; they must also inform the said authority of the circumstances in which their medical training was obtained, and they must keep books according to a prescribed form.

"This Bill, although a step in advance, is not sufficiently far-reaching, because by making regulations to be observed by unqualified practitioners it gives them official recognition. It thus seems to create a new class of practitioners who, though being below the standard of the fully qualified medical profession, are nevertheless legally entitled to attend patients on complying with certain conditions. It would have been better to go to the root of the evil by absolutely prohibiting the practice of medicine by persons who are not

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in possession of a full medical diploma and by prohibiting quack advertisements. It is, however, very improbable that such a radical measure would ever obtain Parliamentary assent, for the unqualified persons whose interests would be affected find many influential supporters among Members of Parliament."

From the above our readers will see how the conditions in Germany both in medical and dental legislation are very similar to those prevailing in our own country and provide an answer to those dentists who are eager to supplicate Parliament for further protection for the public and themselves.

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Deaths Under Anæsthetics.—Dr. F. J. Waldo, Coronor of the City of London and Borough of Southwark, says: "The annual reports of the Registrar-General for England and Wales for the years 1902-06 give a total of anæsthetics for operations: 1902, 148; 1903, 146; 1904, 154; 1905, 155; 1806, 183; total 786; or an annual average of 157·1 deaths. In these 786 deaths the anæsthetic used was: ether alone, 41; chloroform, 478; nitrous oxide, 11; nitrous oxide and ether, 3; A.C.E. mixture, 16; chloroform and ether, 17; ethyl chloride, 15; atropine, 1; and drug not stated, 204. It is obvious from a mere glance at these returns that they are not of much use from a statistical point of view. They merely show that a considerable number of deaths take place every year during general anæsthesia. The fact that the precise drug used has not been reported in 204 cases, or about 25 per cent., renders the figures useless so far as indicating the relative danger attached to individual drugs."

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The Poisons and Pharmacy Bill.—The House of Commons has agreed to the proposal of the House of Lords to refer the Poisons and Pharmacy Bill to a joint committee of both Houses of Parliament.

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TOOTH-BRUSH DRILL.—Tooth-brush drill is to be one of the things taught the school children by the L.C.C. Only those suffering from deafness, however, are to be allowed to take this at first, it being looked upon in the light of an experiment. The initial cost of the drill is estimated at £2, and the annual cost, in respect of payments to helpers and the provision of brushes and tooth-powder, will amount to £17 2s. 8d.

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WHO IS TO DECIDE?—A tooth-puller's advertisement, seen recently, seems to suggest that the "money-back" system of trading is spreading to the profession, for it runs: "Teeth extracted painlessly, 6d. If any pain is felt the money will be returned." The evidence for the plaintiff can have no corroboration.

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"THE UNITED PRACTITIONERS, LIMITED."—*The Lancet* says: "Mr. C. S. Leadbetter, R.D.S., has again sent us a copy of his Bill (which he calls an Act) for 'the Control of the Medical, Dental, and Allied Professions,' together with a letter which he has addressed to the General Medical Council. We commented upon the Bill, soon after it was published, in our issue of February 17th, 1900, p. 510, and we find Mr. Leadbetter's communications no less incomprehensible now than they were then. His literary style is modelled on that of the late Colonel Rawdon Crawley; for instance, 'Technically the Medical Council is in liquidation, as follows, which relates to the same,' a sentence which has the true ring of 'Same which I shot Captain Marker.' Besides his Bill Mr. Leadbetter sends us pamphlets on colonial conferences, British cotton, chloroform, and the relief of Ladysmith. As the General Medical Council has courteously replied that Mr. Leadbetter's letter shall have attention we need say no more."

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# Abstracts of British & Foreign Journals.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary meeting of the Council was held on February 13th, Mr. Henry Morris, the President, being in the chair.

The Council then proceeded to the election of the Conservator of the Museum, and from the candidates, all of whom were zoologists, the Council selected Mr. Arthur Keith, M.D.Aberd., F.R.C.S.Eng., lecturer on anatomy and Curator of the Museum at the London Hospital Medical School.

At the last annual meeting of Fellows and Members the following motion was carried :—

That the President and Council of the Royal College of Surgeons be asked to use their moral influence with hospital authorities to recognise Members of the College (who are also in almost all cases Licentiates of the Royal College of Physicians) as having equal rights with Provincial, Scotch, and Irish graduates to become candidates for hospital appointments.

In accordance with the report of the committee which had been considering this resolution the Council decided to send the following memorandum to the hospitals in England and Wales :—

Attention having been called to a regulation in force at some hospitals, under which the ordinary pass degree of any British University is accepted as qualifying for appointments on the staff, whereas the diplomas of M.R.C.S.Eng. and L.R.C.P.Lond. are not so accepted, the Council of the Royal College of Surgeons of England desire to point out the injustice of this regulation to Diplomates of the two Royal Colleges. In the first place the Council would call attention to the fact that since the introduction of the five years' curriculum the course of professional study required at the universities has not been longer than that required by the Colleges. Moreover, statistics recently compiled by a committee of the General Medical Council show that the average course of study in England is longer than that in Scotland or Ireland, and the inference is drawn by the committee that this difference is due to the regulation of the Royal Colleges in England which guarantees for the subjects of the final examination an uninterrupted period of study of two years from the date of the completion of the intermediate examination.

With regard to the standard of examination, the Council maintain that the examinations in professional subjects, which candidates for the diplomas of the Royal Colleges in England are required to pass, are not less exacting than those required for the pass degrees of most universities. In support of this contention the Council would point to the marked success of the diplomates of the Royal Colleges in England at the examinations for the Royal Navy Medical Service, the Royal Army Medical Corps, and the Indian Medical Service. (See below.)

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The Council believe that, in many cases, the regulation in question was made at a time when there were not more than four universities in England, and when the conditions for obtaining the degrees of those universities were in some respects more exacting than those imposed upon candidates for the diplomas of the two Royal Colleges; but, having regard to existing conditions, they are of opinion that, in all cases in which those holding only the pass degree of a university are accepted as eligible for staff appointments, the same privilege should be accorded to those who hold the diplomas of M.R.C.S.Eng. and L.R.C.P.Lond.

The Council therefore trust that the authorities of hospitals in England and Wales, who make this distinction between diplomates and graduates, will see their way to modify a regulation which affects unjustly many who have studied and qualified in London, where the clinical advantages for medical and surgical education are unsurpassed and places them at a disadvantage with those who have graduated in Scotland, Ireland, and elsewhere.

*Analysis of Returns as to the Examinations for the Medical Department of the Royal Navy, the Royal Army Medical Corps and the Indian Medical Service during the five years* 1903-07, *compiled from Tables presented to the General Medical Council.*

| | Passed. | Rejected. | Percentage passed. |
|---|---|---|---|
| M.R.C.S.Eng. L.R.C.P.Lond. ... ... ... | 344 | 20 | 94·5 |
| English University Graduates ... | 103 | 12 | 89·5 |
| Irish University Graduates ... ... | 153 | 25 | 85.9 |
| Scottish University Graduates ... | 162 | 40 | 80·1 |
| L.S.A.Lond. ... ... ... ... | 14 | 5 | 73·6 |
| Indian and Colonial University Graduates | 16 | 9 | 64·0 |
| Irish Conjoint Diplomates ... ... | 76 | 46 | 62·2 |
| Scottish Conjoint Diplomates... ... | 50 | 42 | 54·3 |

The foregoing statistics are compiled from the results of 27 examinations, and the high position in order of merit obtained by the diplomates of the two English Royal Colleges is shown by the following table:—

| | | | | | |
|---|---|---|---|---|---|
| First place gained by | M.R.C.S.Eng. L.R.C.P.Lond. | 18 | times in | 27 | examinations |
| Second | ,, ,, ,, | 20 | ,, | ,, | ,, |
| Third | ,, ,, ,, | 14 | ,, | ,, | ,, |
| Fourth | ,, ,, ,, | 15 | ,, | ,, | ,, |
| Fifth | ,, ,, ,, | 16 | ,, | ,, | ,, |

It was resolved that the Royal College of Physicians be informed that the Council is preparing to issue a circular to Fellows and Members of the Royal College of Surgeons of England asking their opinion as to whether or not it is desirable that women should be admitted to examination for the diplomas of the College, and that pending the result of this inquiry it is not proposed by the Council to take any further steps with repard to the petition from the London School of

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Medicine for Women. The following is the circular to the Fellows and Members :—

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

DEAR SIR,—The Council, although they have decided that it is desirable to admit women to examination for the Diploma of Member, and although they have power to act upon this opinion, are anxious, in accordance with a resolution passed at a meeting of the Council on May 9th, 1907, to obtain the views of the Fellows and Members on the matter.

In regard to the corporate position of women if the diplomas of the College be granted to them, the Council have taken legal opinion and are advised that, while under the Medical Act of 1876 (39 & 40 Vict. Ch. 41) women can be admitted as Members or as Fellows, no woman so admitted would thereby be entitled to take any part in the government, management, or proceedings of the College.

It is hoped that you will answer the questions on the accompanying post card, and return the card at your early convenience. In order to give time for the arrival of replies from the colonies and other distant localities, the poll will be kept open until the day of 1908.

| *Voting Card.* | *Answer.* |
|---|---|
| A. In your opinion is it desirable that women should be admitted by examination as Members of the College. | |
| B In your opinion is it desirable that women, after admission to the Membership, should be admitted by examination as Fellows of the College. | |

(Please answer YES or NO.)

A letter was read from the President of the General Medical Council stating that a committee of the Council had been appointed to prepare a fresh edition of the British Pharmacopœia, and inviting the College to send to the committee before April 30th next any recommendations or suggestions. A committee was appointed to consider the matter.

The President reported that the vacancy on the Board of Examiners in Dental Surgery, occasioned by the expiration of the period office of Mr. W. A. Maggs, would be filled up after the ordinary Council meeting in March. Mr. Maggs is eligible for re-election.

Upon the suggestion of the President, a small committee was appointed to keep the Council informed as to what is being done from time to time regarding the medical inspection of school children and the arrangements for teaching elementary hygiene in training colleges and schools.

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# THE MEDICAL INSPECTION OF SCHOOL CHILDREN.

THE following circular containing a schedule of medical inspection has been issued by the Board of Education to local education authorities. The schedule has been drawn up in response to requests which the Board of Education has received for further and more definite guidance as regards the details of the work of medical inspection. Sir Robert Morant writes as follows to the local education authorities: —

The Board have been pressed by many local education authorities to issue a complete set of forms for use in carrying out the work directly or incidentally involved in the performance of these new duties. Any forms which experience of the working of the Act may show to be necessary or desirable will be issued in due course, but for the present the Board think it expedient to leave considerable latitude, subject to the considerations hereinafter set out, in regard to the particular forms or schedules to be used in different cases or circumstances. The chief difficulties to be considered are administrative rather than educational or scientific. There is comparatively little dispute as to the end in view or as to the means which, from the technical standpoint of medical science and practice, should be adopted for its complete attainment. But the existing resources of local education authorities are (for practical purposes, at all events) not unlimited, the feelings and prejudices of parents have to be considered, and a new element has to be introduced into school life and organisation with the least possible disturbance and inconvenience. Moreover, in this case two departments of local public administration are brought for the first time into organic connection—those of public health and of public education.

The Board are fully aware of these difficulties, and in preparing their Memorandum and Regulations it was necessary for them to consider what system would best reconcile the theoretical and practical considerations, and overcome the divergence between the ultimate end and the end immediately attainable, or between the methods which are scientifically desirable and those which can be applied in existing circumstances at the initiation of the work under the Act.

In the accompanying schedule the Board indicate the particulars, attention to which they regard as constituting the minimum of efficient medical inspection, and they consider that at least these particulars should be included in any other schedule which the local education authority may authorise for use in their schools. It deliberately excludes many points of antropometric or statistical interest which are worthy of attention, and which it is hoped may receive attention in suitable districts. Nor does it profess to lay down the lines of a clinical study or of a scientifically complete medical examination. It is intended to indicate the methods which, in the Board's opinion, should be followed and the particulars which should be attended to for the purpose of determining the fitness of the individual child for school life, to guide the authority

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in adapting education to the peculiarities or abnormalities of the child and to prepare the way for measures for the amelioration of defects in the child or its environment. A more elaborate and complete form could readily be devised, but the Board's knowledge of the circumstances in which the work is to be done leads them to believe that greater elaboration would in the majority of cases defeat its own end.

If this schedule is properly used, few cases of serious physical weakness or defect will escape detection. Where the ordinary inspection shows the need of further and more searching medical examination a supplementary blank form should be used in which particular defects or diseases should be fully recorded. It may facilitate inspection if the schedule is printed on cards (6 inches by 5 inches or 10 inches by 6 inches). The notes are included in the attached form for the convenience of the school medical officer, and should not be reprinted on the cards. Of course it is not necessary that negative findings on all the points mentioned in the notes should be recorded. It will be noticed that a space is reserved in the schedule for "General Observations"; this may conveniently be used to record a general summary of the condition of the child, and any information which may be available as to the home environment, or other conditions affecting its health. It is considered that the inspection of each child should not occupy on the average more than a few minutes, and that the child need only, as a rule, have its clothes loosened or be partially undressed. Time may be saved in the actual inspection by the medical officer if the entries in some of the spaces are filled in by the school authorities before his visit. The four columns in the schedule are designed for the four inspections required, during school life. With regard to items 17 to 24 of the schedule, while it is necessary that all indications of diseased or unsound conditions should be thoroughly investigated, needless medical examination of healthy children should, for obvious reasons, be avoided.

Where children are found to belong to that class of "defectives" for whose education special provision is or ought to be made under the Statutes relating to such children, such cases should be made the subject of a special report to the local education authority.

*All entries of the results of inspection in each individual case must be regarded as confidential.*

With this circular specimen cards were inclosed which we have already noticed in *The Lancet*, but cards will not be supplied with the copies of the circular which are placed on sale.

The following is the schedule accompanying Sir Robert Morant's circular letter to local education authorities :—

SCHEDULE OF MEDICAL INSPECTION.

I.—Name..... Date of Birth (1).....
Address ..... School..... .....

II.—Personal History :

*a.* Previous Illnesses of Child (before admission). (2).

| Measles. | Whooping-Cough. | Chicken-pox. | Scarlet fever. | Diph-theria. | Other illnesses. |
|---|---|---|---|---|---|

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*b.* Family Medical History (if exceptional) (3).

| | I. | II. | III. | IV. |
|---|---|---|---|---|
| 1. Date of Inspection ... ... ... | | | | |
| 2. Standard and regularity of attendance (4) | | | | |
| 3. Age of Child (5) ... ... ... | | | | |
| 4. Clothing and Footgear (6) ... ... | | | | |
| III.—*General Conditions* | | | | |
| 5. Height (7) ... .. ... ... | | | | |
| 6. Weight (8) ... ... ... ... | | | | |
| 7. Nutrition (9) ... ... ... ... | | | | |
| 8. Cleanliness and condition of skin (10)... | | | | |
| Head ... ... ... ... ... | | | | |
| Body ... ... ... ... ... | | | | |
| IV.—*Special Conditions.* | | | | |
| 9. Teeth (11) ... ... ... ... | | | | |
| 10. Nose and throat (12) ... ... ... | | | | |
| Tonsils ... ... ... ... | | | | |
| Adenoids ... ... ... ... | | | | |
| Submax. and cervical glands ... | | | | |
| 11. External eye disease (13) ... ... | | | | |
| 12. Vision (14) ... ... ... ... | | | | |
| R. ... ... ... ... ... | | | | |
| L. ... ... ... ... ... | | | | |
| 13. Ear disease (15) ... ... ... | | | | |
| 14. Hearing (16) ... ... ... ... | | | | |
| 15. Speech (17) ... ... ... ... | | | | |
| 16. Mental condition (18) ... ... ... | | | | |
| V.—*Disease or Deformity.* (19). | | | | |
| 17. Heart and circulation (20) ... ... | | | | |
| 18. Lungs (21) ... ... ... ... | | | | |
| 19. Nervous system (22) ... ... ... | | | | |
| 20. Tuberculosis (23) ... ... ... | | | | |
| 21. Rickets (24) ... ... ... ... | | | | |
| 22. Deformities, spinal disease, &c. (25) ... | | | | |
| 23. Infectious or contagious disease (26) ... | | | | |
| 24. Other disease or defect (27) ... ... | | | | |
| Medical officer's initials ... ... | | | | |

General observations.

Directions to Parent or Teacher.

NOTES FOR INSPECTING OFFICER.

1. Date of birth to be stated exactly, date of month and year.

2. "Other illnesses" should include any other serious disorder which must be taken into account as affecting, directly or indirectly, the health of the child in after-life, e.g., rheumatism, tuberculosis, congenital syphilis, small-pox, enteric fever, meningitis. fits, mumps, &c. The effects of these, if still traceable, should be recorded.

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3. State if any case of, or death from, phthisis, &c., in family.

4. Note backwardness.

5. Age to be stated in years and months, thus 5 4-12's.

6. Insufficiency, need of repair, and cleanliness should be recorded (good, average, bad).

7. Without boots, standing erect with feet together, and the weight thrown on heels and not on toes or outside of feet.

8. Without boots, otherwise ordinary indoor clothes.

Height and weight may be recorded in English measures if preferred In annual report, however, the final averages should be recorded in both English and metric measures.

9. General nutrition as distinct from muscular development or physique as such. State whether good, normal, below normal, or bad. Under-nourishment is the point to determine. Appearance of skin and hair, expression, and redness or pallor of mucous membrane are among the indications.

10. Cleanliness may be stated generally as clean, somewhat dirty, dirty. It must be judged for head and body separately. The skin of the body should be examined for cleanliness, vermin, &c.; and the hair for scurf, nits, vermin, or sores. At the same time ringworm and other skin diseases should be looked for.

11. General condition and cleanliness of temporary and permanent teeth, and amount of decay. Exceptional features, such as Hutchinsonian teeth, should be noted. Oral sepsis.

12. The presence or absence of obstruction in the naso-pharynx is the chief point to note. Observation should include mouth-breathing; inflammation, enlargement, or suppuration of tonsils; probable or obvious presence of adenoids, polypi; specific or other nasal discharge, catarrh, malformation (palate), &c.

13. Including blephartis, conjunctivitis, diseases of cornea and lens, muscular defects (squints, nystagmus, twitchings), &c.

14. To be tested by Snellen's test types at 20 feet distance (equal 6 metres). Result to be recorded in the usual way—e.g., normal V. equal 6-6's. Examination of each eye (R. and L.) should, as a rule, be undertaken separately. If the V. be worse than 6-9'ths, or if there be signs of eye strain or headache, fuller examination should be made subsequently. *Omit vision testing of children under six years of age.*

15. Including suppuration, obstruction, &c.

16. If hearing be abnormal or such as interferes with class work, subsequent examination of each ear should be undertaken separately. *Apply tests only in general way in case of children under six years of age.*

17. Including defects of articulation, lisping, stammering, &c.

18. Including attention, response, signs of overstrain, &c. The general intelligence may be recorded under the following heads: (*a*) bright, fair, dull, backward, (*b*) mentally defective; (*c*) imbecile. *Omit testing mental capacity of children under six years of age.*

19. Under the following headings should be inserted particulars of diseased conditions actually present or signs of incipient disease. The extent of this part of the inspection will largely depend upon the findings under previous headings.

20. Include heart sounds, position of apex beat, anæmia, &c., in case of anything abnormal or requiring modification of school conditions or exercises.

21. Including physical and clinical signs and symptoms.

22. Including chorea, epilepsy, paralyses, and nervous strains and disorders.

23. Glandular, osseous, pulmonary, or other forms.

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24. State particular form, especially in younger children.
25. Including defects and deformities of head, trunk, limbs. Spinal curvature, bone disease, deformed chest, shortened limbs, &c.
26. Including any present infectious, parasitical, or contagious disease, or any sequelæ existing. At each inspection the occurrence of any such diseases since last inspection should be noted.
27. Any weakness, defect, or disease not included above (e.g., ruptures) specially unfitting child for ordinary school life or physical drill, or requiring either exemption from special branches of instruction, or particular supervision.—*Lancet*

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## A PRACTICAL METHOD OF REMOVING LIVING DENTAL PULPS.

By E. T. Loeffler, D.D.S., Ann Arbor, Michigan.

Many of the so-called "practical methods," as given in our journals, have too much of an ideal nature and require so many special facilities that the average man will not make use of them.

The simplest, most efficient and painless method of removing the living dental pulp is as follows: Thoroughly cleanse the oral cavity by means of warm water, containing some antiseptic solution, using either syringe, hand or compressed air atomizer, in fact, any facilities the operator may have at hand. Then isolate the tooth by adjusting the rubber dam in every case in which that process is possible. Next carefully cleanse and disinfect all the exposed tooth by a 3 per cent. solution of some preparation of $H_2O_2$. The object of these preliminary steps is to obtain as nearly as possible a clean field of operation.

Cases in which there is already an existing cavity are most conveniently treated by carefully removing all debris and decay without pain, if possible. Then treat the cavity for a few minutes with Dentalone, a saturated solution of chloretone in the essential oils, than which there seems to be no better preparation on the market. If the cavity happens to be proximal, the matrix and matrix-retainer should be adjusted so as to change it into a simple one.

A tablet containing 1-6 gr. cocaine hydrochloride and 1-300 gr. of adrenaline chloride, as prepared by Parke Davies & Co., should now be placed in the cavity and moistened with a drop of water. Upon this is placed a piece of unvulcanized rubber and forced into the cavity with a

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gradually increasing pressure ; a short orangewood stick fitted to the opening, and so adjusted that the patient can bring about a gradual and increasing pressure by means of the opposing teeth. Cases in which the pulp is already exposed will be ready in one or two minutes, depending upon conditions. If the pulp still continues to be sensitive, try a weak solution of cocaine without the adrenaline and then follow with a solution of adrenaline (1-1000). Although I still maintain, with others, that there is some objection to the use of adrenaline, it enables one to completely remove the pulp at one sitting.

When there is no existing cavity one may be made in the direction of axis of the tooth, and just through the enamel, and the cocaine and pressure applied as above indicated. Two or three applications may have to be made before the pulp can be exposed. The bur used should be dipped in phenol or dentalone before using. Should the pulp still be slightly sensitive, make another application and keep up the pressure for about 40 seconds. The cavity should now be sufficiently enlarged with suitable burs so that free access can be had to all the canals. On account of the insensibility of the parts, great care should be exercised so as not to make any perforations. By means of barbed broaches, Gates-Glidden drills, Beutel-rock drills and root-reamers, previously dipped in denntalone, the pulp may be thoroughly and completely removed. This part of the operation must not be slighted if you wish to avoid the trying ordeal of removing sensitive fibres at the next sitting.

$H_2O_2$ 3 per cent seems to be a most efficient drug for removing blood and debris from the cavity. The cavity is then flooded with dentalone, the excess removed, cotton inserted into the canals and pulp-chamber, and the balance filled with temporary stopping. This dressing should remain at least 48 hours, at which time the root canals may be filled in the usual way.

Should there be any soreness the treatment may be repeated and counter-irritants applied, aconite and iodine being a favourite one.

This method, if strictly adhered to, will give excellent results in at least 75 per cent. of cases. Success will depend largely upon the following rules :

1. Completely remove all traces of the pulp at first sitting.

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2. Dip all instruments in a germicide before inserting them into the pulp-chamber.

3. Never fill a root canal at the same sitting; it will give the tooth a better chance to recover from the shock.—*The Dental Summary.*

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## FROM AN OLD DENTAL BOOK.

THE following is taken from a book on Dentistry written by a Dr. Nicholles about a century ago:

Where amongst our multitudinous dentists of to-day could we get one to describe a "case" with the delicacy, the sympathy, and, above all, the impressiveness of style to be found in this description: "The young lady who is the subject of this notice was in her twenty-sixth year, and, I may add, of engaging manners. Her case was one which is usually expressed by the familiar, and perhaps vulgar, phrase, 'underhung'—that is, the circle of the lower teeth received the circle of the upper within itself when the mouth was perfectly closed; at such times the nose and chin nearly met, and the face, though every feature, separately considered, was really beautiful, yet assumed the appearance of old age. Many professional gentlemen were consulted, but all declined interfering in a case, the attempt to remedy which was perfectly novel, and which certainly held out no great promise of eventual success. The anxiety and mortification of the mother had increased with the daughter's years, and had at last become excessive, the rather as, under the influence of these irritations, she attributed the young lady's continued celibacy to this unhappy malformation. Regret, too, for her own neglect might probably have had its share in producing this excitement.

### SUCCESS.

"It was now, by the recommendation of a friend, that the young lady was brought to me. After some reflection on the case, I thought success, though far from being certain, was yet probable. My only fear was that, as the cure must necessarily be slow, the young lady herself might defeat my plans for her benefit by the want of sufficient patience. This difficulty was fairly pointed out, and met by promises of that perfect obedience without which it would be utterly useless

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to attempt the removal of so extensive a deformity at such an age. A machine was made and applied, inconvenient perhaps, but by no means painful, the object of which was, by gradual compression, to cause the lower teeth to incline inwards, and to give to the upper row their natural projection outwards. In a short time, less even than could be reasonably expected, a visible improvement took place, and this inspired the young lady and her mother with confidence in my mode of treatment, and renewed patience to endure its continuance for the tedious period of nearly six months. At the end of this time, by unremitting attention and by the careful adaptation of remedial pressure, according to the changing form of the mouth, I had the gratification of beholding her face restored to the most perfect symmetry." This little narrative is, moreover, interesting from being a record of the importance of the application of an appliance which is to-day in the stock of the smallest dentist.

But in this book on dentistry, as in all other books, one is reminded that, though habits and customs change, men and women always remain the same. The quack is ever in the pillory of medical indignation, and yet he ever thrives and waxes fat; he even sometimes has the satisfaction of seeing the professional stone throwers grow lean and lantern-jawed. In dentistry he has a field where all his choicest gifts get opportunity for display. He evidently recognised this at an early date. Hence this warning: "Another and no less serious result of this general ignorance on the subject is that it exposes the unwary multitude to quackery in all its forms and varieties. Sometimes this charlatanism exhibits itself in the shape of remedies for the toothache—as a lotion or tincture—the effect of which is to destroy the nerve, and with the nerve the tooth itself, as a matter of course; or as anodyne cements, which, if crammed into a carious tooth suffering from inflammation, naturally gives rise to abscess in the jaw; or as pastes, which are to prevent decay and whiten the teeth, and which, if they do no harm, do no good, though it is seldom that the patient is fortunate enough to escape with the latter and better half of the alternative. There is no branch of the medical and surgical profession so replete with uneducated imposters as that of the dentist. A little mechanical ingenuity, such as belongs to the turner in ivory, is frequently all the qualification possessed towards the fulfilment of duties which require a thorough knowledge of

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anatomy and a competent acquaintance with physiology and the general practice of medicine. That empiricism should have prospered in remoter periods, before chemistry and anatomy had made any great advances, is not perhaps a matter for our wonder, but that such worn-out absurdities should find, as they do, both credence and admirers in the present enlightened day, is indeed surprising. It has, however, been well observed that mankind are fond of mystery, and it is more congenial with a sick man's mind to expect relief from the occult qualities of a medicine than from its sensible virtues. Hence arises the endless train of nostrums and impositions, which are a disgrace to the age and nation, and leave us little reason to exult in the progress of intellectual philosophy."

## FACTORS IN RETENTION.

By Varney E. Barnes, D.D.S., Cleveland.

Complete or perfect regulation is the greatest factor in retention. With it attained all other factors shrink in importance since nature is thus allowed to become operative and every tendency of the future is towards the normal. With it, cusps, bite, stress, root, occlusion, function, all contribute to aid in retention.

With this attained, all other retention need be but slight as compared to a partial result with its concomitant necessity for stress resisters.

It is unfortunately too true that we probably never get this complete although we may attain the approximate result.

To approximate complete regulation, it is a good practice to go beyond what seems normal that there may be a counteracting tendency against known and possible unknown forces liable to be or become operative. Thus in expansion, expand a trifle too much. It cannot be held too far. Or in rotation carry it beyond and hold it there to counteract the tendency to return.

Early regulation provides the nearest approach to perfect regulation. It aids in providing space for the eruption of the permanent teeth uncrowded, then provides for their

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movement into correct positions with the subsequent formation of the permanent alveolus about them.

Methods of regulation produce physiological or pathological changes in the tissues, according to rational careful pressure, or to hurried, barbarous, arbitrary movements. The retention will be in a measure, proportionate to the mode of applying pressure.

The time of the regulation may call for a prolonged or short retention. An adult may need permanent fixtures because only partial results may be attained. A seven-year-old child may call for a year or two, or a deciduous retention. An early regulation may provide the space that will permit the normal eruption of the succeeding teeth with almost no period of retention.

The first permanent alveolus formed about the teeth in its correct position is a factor too often undervalued. It is not a secondary deposit, it contains no lines of stress or curves of another formation likely to pull the teeth into the old position. It is the first new bone, designed to hold the tooth for calculated strains. It bears no relation to the secondary deposit of bone *supposed* to gain strength after years of retention.

If this alveolus can be made to form about the tooth on its forcible eruption into the right place only temporary mechanical retainers will be necessary.

Regulation of the deciduous teeth and force expended through them provide the very necessary means of influencing and moving the permanent succeeding teeth before they erupt. This means an opportunity for completion of regulation of remaining malposition as they erupt and be-before the alveolus forms. Thus operations through the deciduous teeth are great factors in the approximation of perfect regulations.

Too short retention might remove a resistance to stress during developmental periods and thus permit that perverted force to reform the malposition.

Developmental periods might, in some cases, have to be considered as extending from eight to eighteen or more years of age. Retrusions of the lower jaw with resulting distal occlusion of the teeth demand prolonged retention and the extent is yet only problematical. Upper retrusions are similar to the lower.

Prolonged retention is necessary in cases of delayed



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jaw development and tooth eruption. It must maintain a certain relation while other developments take place and finally form the natural support.

Appliances are the temporary devices that are too often expected to work a miracle and in some unaccountable manner make teeth stay in any desired position—arbitrary or natural.

Appliances are but a means to an end. They are temporary (except in mutilated or rare cases), provisions for maintaining conditions until natural processes provide for anatomical retention.

The style of appliance may be a large factor. One retainer is not suited to all apparently similar cases. Other factors modify its utility. Some patients and teeth will tolerate removable while others should have nothing but fixed apparatus.

The best retention is perfect regulation maintained temporarily by means of a fixed or rigid resistance against the tendency to the former position and at the same time allowing flexibility in all other directions. This approximates and imitates the natural tooth fixation.

Hereditary tendencies are factors that must not be slighted or overlooked. We may not definitely determine that heredity is going to produce a measured result but we know it will have a persistent, life-long influence. Therefore we must estimate that influence as a factor against the ideal and plan the mechanical retention accordingly. Plus regulation may be a means of partially anticipating or practically nullifying these pernicious tendencies.

Hereditary tendencies seem to prohibit the possibility of ever attaining the normal.

The shape of the teeth, especially the depth of the cusps, are factors that deserve consideration and may be depended upon to some extent for retentive influences. Abnormalities in size and shape of crown and roots may produce conditions far from the normal.

Teeth that disintegrate easily must be considered, for the retention may become a detrimental or favourable factor; detrimental on account of collection of deleterious products; favourable on account of cemented bands protecting weak structures.

Mutilated cases with teeth lost, accident cases, peculiar root inclinations, and pathological cases all present some

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characteristics that need special consideration in retention and they are all factors that may call for practically permanent retention.

What the operator learns of the character of his patient during the regulation should guide him in the selection of the retention appliance. The dependable patient may have the best means of retention ; it may be inconspicuous, light, removable or fixed, and if anything goes wrong with it you know you will have the opportunity to right it. The restless, flighty patient has to have the most enduring appliance, has to be constantly watched, has to be carefully guarded from decay and then is apt to nullify all efforts to hold what may have taken years to gain.

The use of the teeth after all regulation is of course a factor and it is an important one. It means strength, growth, vitality, disease resistance, function stimulation and health, not only of the teeth but also of the surrounding tissue and of the entire individual. This means a tendency to the normal.

Non-use and perversion of function results in atrophy, disease, and tendencies to produce stress in wrong directions, creating irregularities.

Holding the tongue between the teeth, mouth-breathing and lip biting all produce stress in abnormal directions, and are incentives to distortions.

The care and watching given an apparatus becomes a factor for it prevents tooth decay, insures the maintainance of relations, allows a change if the unexpected happens. It gives confidence to the patient and parent that is so necessary in the prolonged retentive periods demanded by some cases. It permits the use of appliances that otherwise would be out of the question.

Incomplete regulation is a much to be considered negative factor. It is the factor that is responsible for the cry for more efficient retainers. Let us understand that *failure i retention is largely failure in regulation*, then we will depend less upon mechanical appliances to do for us what we have failed to accomplish.

Development of the patient and his jaws and teeth are factors which are present in immature individuals. So long as he is developing will there be a shifting and a probability of perverted forces being expended upon the teeth. Regulation must consider this development and must counteract the

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tendencies if they are evil or allow for them if they are beneficial.

Development may be expected to go ahead and aid retention in some cases, but in upper retrusions it must be calculated as a negative factor. It may be stimulated and changed to a positive factor—it is so recognised now—but years of trial are yet necessary to prove that the negative factor is not the major one.

Occlusion, the result of regulation, is a positive in its own maintenance. It must not be relied upon too much, for it is dependent upon modifying, limiting conditions.

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# Dental News.

## EDINBURGH DENTAL HOSPITAL.

THE director's report on the work done during 1907, in the Incorporated Edinburgh Dental Hospital and School was submitted to the annual general meeting of the institution. Dr. Guy presided. The report stated that that the total number of operations, including extractions, was 18,040, as against 14,749 in 1906. The directors were gratified by the large increases in the conservation and prosthetic departments, for they held that the increases demonstrated the confidence of the public in the Hospital, and the growing appreciation of the value of the preservation of the teeth. The total income for the year amounted to £2143, of which 1117 1s. 9d. was derived from the fees of students and pupils, and £1026 2s, from other sources. The expenditure amounted to £1507 9s. 2d., leaving a surplus of £635 14s. 7d. Including the surplus the amount of the funds available for the contemplated extension of the premises amounted to £2265 11s. 7d., while the cost of the erection of the proposed new building and the furnishing and equipment thereof, might be roughly estimated at not less than from £7000 to £8000. Dr. Joseph Bell moved the adoption of the report. Alluding to the work which was being done in the Hospital for the poor of the city, he said it ought to be understood that the work of the Institution was of extreme value to the State,

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because if the lower class did not have teeth with which to chew their food they would become ill, and might have to go into hospital, where a great deal of money might have to be expended upon them. The presence of decaying or decayed teeth was about as bad for the health of the individual as anything could be. If in the hospital they had been removing bad teeth at the rate shown in the report they had greatly benefitted the health of the community. For some reason or the other—he thought it was chiefly due to the fact that people did not eat porridge nowadays—teeth were not so good as they used to be. They decayed much sooner than they used to decay. He believed that many of the miserable teeth that were to be seen in small children were due to insufficient and improper feeding. He commented upon the value of the education work of the Hospital, and, speaking of the qualifications of the dentist, he said that everyone who was going to take the life of a fellow creature into his hands by giving the patient a general anæsthetic ought to know enough about the heart, lungs, and the interior generally to know whether the patient was a fit case for anæsthetics. The report was unanimously adopted. Mr. Walter Campbell, L.D.S., Dundee, Dr. P. Hume M'Laren, and Bailie Inches were re-elected directors.

## EXETER DENTAL HOSPITAL.

THE Mayor of Exeter (Mr. H. Gadd) presided over the 28th annual meeting of the subscribers to the Devon and Exeter Dental Hospital at Exeter.

The report of the Committee stated :—3,477 cases have received attention during the past year, making a total of 127,723 since the opening of the institution, thus giving an average of 4,561 per annum. The income for the year has been £153, expenditure £186 3s. 4d., leaving a debit balance of £32, less £4 credit from last year, showing a total deficit of £28 2s. 1'd. to be carried forward to 1908. The Committee profoundly regret the resignation of Mr. J. T. Brown-Mason, who has left Exeter. In recognition of his valuable and lengthened services they have elected him consulting dental surgeon. Mr. Clifford Silver, L.D.S., has been appointed dental surgeon in the place of Mr. Browne-Mason.

The Mayor, moving the adoption of the report and

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accounts, said the hospital was now in a state of great efficiency, and also in a state of permanency, as they were now occupying their own freehold, thanks to the generosity of Mrs. Nosworthy. It was to be regretted that whilst they had a decreasing income, they had an increasing expenditure, and he hoped that the benevolent public would not allow the work of such a deserving institution to be crippled through lack of funds. His Worship also moved the re-election of Mr. Harry Hems as president.

Mr. Hems, in returning thanks for his re-election, said he was one of the founders of the institution 29 years ago. The hospital was never in a more efficient state than it was at present, and it said much for the economy practised when they saw that nearly 4,000 cases had been relieved during the past year, and at an expenditure of only £150.

Preb. J. G. Dangar, D.D., Messrs. H. Campion and C. R. Collins were re-elected members of the committee; Mr. J. M. Ackland, hon. treasurer; Mr. W. A. Hooker, secretary; and Mr. W. C. Knill, auditor.

On the motion of Mr. Hems, seconded by the Rev. the Hon. H. H. Courtenay, a hearty vote of thanks was accorded the honorary medical staff for their past services and to the Mayor and Sheriff for their attendance.

Rev. the Hon. H. H. Courtenay appealed for additional support from the county for the hospital, which treated patients from the county as well as from the city. It was a matter for regret that only one church offertory was received from the diocese. It was not fair that Exeter should bear the whole brunt of the work of the hospital.

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## PRESENTATION TO MR. HARRY ROSE, L.D.S.Eng.

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The Annual Dinner of the Staff of the National Dental Hospital and College, held at Pagani's Restaurant, on March 19th, was made the occasion of a presentation to Mr. Harry Rose, who has lately resigned his position as Lecturer on Dental Mechanics to the College.

Mr. Sidney Spokes, the Dean, occupied the chair and there was a full muster of the Staff to do honour to their late colleague, who is most deservedly respected and beloved by

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all of them. There were also present one or two of Mr. Rose's other personal friends and three of his sons.

After the loyal toast had been duly honoured, the Chairman gave the only other toast, that of their honoured guest, Mr. Harry Rose. Mr. Rose had joined the National Dental Hospital as Assistant Surgeon in 1871, and had subsequently become Surgeon and Lecturer on Dental Mechanics. His Lectures were always supplemented by a series of Demonstrations which were of the greatest value to the Students, as Mr. Rose not only loved his subject, but loved instructing others in his Art. In the name of his colleagues he had much pleasure in presenting Mr. Rose with an artist-proof etching by Macbeth, of a "Pastoral," by Mason, and desired him also to accept for Mrs. Rose an amethyst and pearl pendant. That meeting was only a small one, but he hoped that when Mr. Rose's old pupils and students knew that their old teacher was retiring from his post as lecturer they would show their affection for him in a more public fashion. In conclusion, he stated that Mr. Rose's connection with the College would not be entirely severed but that a place would be reserved for him so that he could give them occasional Lectures or Demonstrations.

Mr. Rose, who spoke with evident emotion, said he had no words to thank his colleagues for their kindly actions towards his wife and himself. He had come there that evening, though far from well, and should never forget the occasion. He did not know how he could have borne parting from the College if it were not that he should still be in touch with them, and hoped to give Lectures or Demonstrations from time to time. He had loved his work there, and the thirty-seven years he had spent in connection with the Hospital and College had been very happy ones. He thanked them all from the bottom of his heart.

The musical programme was under the able direction of Dr. Maughan, who presided at the piano. Songs, stories and recitations were given by various members of the Staff, including Messrs. H. P. Noble, C. Glassington, H. Rose, Olver and Rushton.

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# Legal.

## DENTAL PROSECUTION.

### Case Dismissed.

At Liskeard Borough Police Court, before the Mayor, a case of interest to the dental profession occupied some time. Mr. E. Sherwood, Clarence House, Liskeard, was summoned on information, laid by Mr. R. Arthur Peter, solicitor, Liskeard, on behalf of the British Dental Association, "that he on the 14th day of February 1908, not being a legally qualified medical practitioner, and not being registered under the Dentists' Act, 1878, did use a description implying that he was a person specially qualified to practise dentistry." Mr. A. W. Venning, instructed by Mr. R. Arthur Peter, conducted the case for the prosecution and Mr. Percy Robinson, (London), defended on behalf of the Incorporated Society of Teeth Extractors and Adaptors of Teeth, of which defendant is a member.

### Case for the Prosecution.

Presenting the case for the prosecution, Mr. Venning said it was taken under the Dentists' Act, the purport of which was that no person who was not registered under that Act should take or use the name, title, addition or description of dentist, or any name or description implying that he was on the register under the Act or that he was a person specially qualified to practise dentistry. The Act was passed in twofold interests. No doubt it was passed partly for the protection of a body of men, who by a little education and expenditure of money qualified themselves to do all that was considered requisite by the public in the matter of dental operations; and it was also passed in the interests of the public, who wanted dental operations performed so that they should not be misled by any form of advertisement and go to people who had not gone through any curriculum or course of study, under the impression that they were qualified. At first the words in the summons "specially qualified to practice dentistry" might convey to their Worships some doubt as to its meaning. It did not mean a person specially qualified in that he possessed a diploma, or anything of that sort, but simply that he was specially qualified from the point

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of view of skill and ability. The Veterinary Surgeons' Act also used the words, and a case was taken to the High Court on the ground that the words used by the defendant did not come within the Act. The words used were "veterinary forge," and Mr. Justice Wills said: "In my judgment the word 'qualified' does not necessarily mean holding a diploma, but it means that the person is competent as a veterinary surgeon to deal with diseases of horses, cattle, etc. A person who holds out his forge as a veterinary forge represents to the public that they who come to him get the benefit of the veterinary skill or art which he professes to possess. The reasoning in that case was the reasoning which he, Mr. Venning, asked their Worships to adopt in the present case, and which had been adopted in various parts of the country. When a person used a description that implied he was able to work, whether he had a diploma or not, that was sufficient to bring him within the section of the Act under which the charge was brought.

The infringements of the Section in respect of which the charge was brought were two in number. In the first place Mr, Sherwood had a door-plate on the outside of Clarence House, where he resided, and on it was "E. Sherwood, artificial teeth and painless extractions," The Dental Association contended that that implied that Mr. Sherwood was holding himself before the public as a person specially qualified in dental matters. He said in effect, that he was able to extract teeth painlessly. He (Mr. Venning) knew it was a matter of scepticism with some as to whether teeth could be drawn painlessly or not, but the plate implied that he was possessed of more than ordinary skill, and that he was a person who extracted teeth not in the ordinary simple manner, but also by means of local or other anæsthetics, which in the hands of persons not specially skilled resulted in danger to health. The other charge was that the defendant had distributed cards in the borough of Liskeard and elsewhere. It stated: "Artificial teeth and painless extractions at reduced charges. Our artificial teeth are fitted with all the latest improvements and without pain. By the aid of the latest mechanical appliances we are enabled to complete sets of teeth and all repairs in a day. Repairs at the shortest notice." Then came a part which might be a reflection on other men: "Cases which are uncomfortable, or cannot be worn, remodelled and reset, or altered in any

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manner which may be necessary to ensure comfort and utility." That was a direct imputation that the defendant could do better work than other people. The Act laid it down that whether he could or could not, he must not tell people so. The Act said that no description must be used.

Mr. Robinson: The Act doesn't say that.

Continuing, Mr. Venning touched on the question of stopping, which Mr. Sherwood advertised from 2s. 6d. He believed it was a fact that, in order for a proper dental practitioner to do proper work in stopping, he would have to go to one of the hospitals, or one of the recognised dental schools before he could be properly qualified in the eyes of the British Dental Association. In conclusion, Mr. Venning submitted that by his door-plate and card, Mr. Sherwood was practically claiming for himself that he was able to do all a properly registered qualified dentist could, whereas the law laid it down that unless he was registered under the Dentists' Act, or was a registered practitioner, he had no right whatever to advertise in that way.

Mr. Venning handed in copies of the Medical and Dental Registers, but the defendant admitted he was not on them; also that he had the plate outside his door and circulated the card.

CASE FOR THE DEFENCE.

Mr. Robinson, for the defence, submitted that there was no case, and said that first of all, before dealing with the legal question, he was anxious to dispose of a suggestion by Mr. Venning, which he ventured to suggest was not quite correct. He said that the object of the Act was for the protection of dentists and in the interests of the public, and that it was so, so that the public in going to a person who called himself a dentist should know that he was going to someone who had passed through the curriculum, or had undergone some special training. That was an absolute fallacy on the part of his friend, and he could prove it by referring to the Dentists' Register for 1907, by which it would be seen that out of 4,772 persons who were entered on the register as dentists, 2,132 were persons who had not passed through any curriculum whatever, because the Act provided that certain persons were to be entitled to admission to the register without undertaking an examination, but upon their making a statement that they had been in practice. He was anxious to clear that point, because it showed that it was very different

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to the case of medical men. If they saw a plate with the letters M.R.C.S., or L.R.C.P. after a gentlemen's name, they knew that it was an indication that there had been some training, but with regard to the dentist to quote that register was no guarantee whatever that a man had undergone any training or passed any curriculum at all. That brought him to his second point. He did not say it offensively, or that registered men had not a perfect right to try and humble and cramp unregistered men, but this was not a prosecution instituted for the benefit of the public, as so many were, for instance, under the Food and Drugs Act. He did not use the expression offensively, but this was a trades' union prosecution pure and simple. It was a prosecution not even instituted by the governing body of dentists, because he knew Mr. Venniug would concede that the B.D.A. were not the governing body, but the Medical Council. The B.D.A. was not even representative of the profession of registered dentists, because only those persons who were dental surgeons were members of that body. His friend had not cited in any case in any part of the country where painless extractions had been held to be infringemeuts of the Act.

Mr. Venning said he had cases in Dental Journals of the B.D.A., where there were convictions, but he did not go into them because they were not binding.

Continuing, Mr. Robinson said that Mr. Venning would doubtless grant him that there was no High Court authority under the Act in support of his statements. The case brought forward by the Royal College of Veterinary Surgeons was under quite a different statute, and was therefore no authority for the statute under which the present proceedings were instituted, so that the words which Mr. Justice Wills uttered, and which were quoted for the prosecution, and at first sight appeared of importance, were really so far as this case was concerned of no importance, as the case was under an entirely different Act. The Veterinary Surgeons' Act laid it down that the word "veterinary" must not be used except by duly registered men, and in that particular case the man used the word in "veterinary forge," and it was on the use of that word that the Court convicted and the higher Court upheld the conviction. Mr. Robinson read the section of the Act dealing with the summons, and said it was conceded that any man could practise dentistry. He could extract teeth or put in stopping, and it was open to him to tell the public

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that he would do it. He could put in artificial teeth and advertise his charges, and there was no law to say that he had not a perfect right to do so. He would go further, and say that the man might say: "I do my work thoroughly. I will take out your teeth and undertake that you shall not suffer pain." Whether teeth could be extracted painlessly or not he would not go into, though he believed some people, registered and unregistered, would tell them they could be. He submitted that the Dentists' Act was passed for the express purpose of giving dentists a title. Defendant's card was not a contravention of the Act. Mr. Sherwood added no title, addition or description. The Act was never intended to restrict the practice of dentistry, but for the express purpose of creating a dental title, and giving certain persons who had done certain things, the right to use this specific title. Quoting the case of "Emsley v. Patterson," in which Mr. Emsley had plates on either side of his door with the inscriptions, "Mr. Emsley, Dental Office," and "American Dentistry," it was held that it did not constitute an infringement of the very section their Worships were asked to construe that day. What Lord Trainer said in giving judgment was: "What the Statute provided against was anyone using a name or description which is the description of a registered or qualified practitioner, who is not in fact entitled to the designation which the assumed name or description implies," and in commenting particularly on the case before him: Here the appellant had assumed no title whatever. He does not call himself a dentist, dental practitioner, dental surgeon, or licentiate in dental surgery. If he did that he would contravene the Statute. He has added nothing to his own name, which I think is the thing the Statute prohibits, by way of title or description, implying he is registered." Lord Justice Clark said: "The Act does not strike at the practice of dentistry." Therefore, he contended that there was not a single word which could be construed as meaning that Mr. Sherwood had added anything to his own name by way of title, addition or description. All he had said was: "I put in artificial teeth, and I will extract teeth painlessly," which he had a perfect right to do. There was not a word in the Statute to prohibit his doing so. For close on 30 years the Act had been in existence, and the construction he asked their Worships to put upon the case

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had never been seriously challenged. He called their attention to the Kettering case in 1905, of which he handed in a newspaper report. The case was dismissed, and the standing counsel for the B.D.A. was exceptionally anxious at the time. He asked for a case to be stated, and the magistrate agreed, and the B.D.A. never took the case to the High Court; therefore he had a perfect right to say that was a Trades' Union prosecution, and that the construction he put upon the Act had never been seriously challenged. He would put in a map of the Liskeard District, and call their Worships' attention to an advertisement in the corner. He would mention no name, or say whether the advertiser had anything to do with his friend's (Mr. Venning's) Association, but the map was bought at Messrs. Philip's stationer's shop that morning, and it was to meet that form of competition that they themselves were obliged to advertise. The Association he represented would be glad if something could be mutually arranged all the way round to stop advertising, and come to some arrangement to prevent the bickering which was going on between the two sides. Two years ago they approached the other side on that ground, but they would not meet such outcast persons as unregistered men. Concluding, Mr. Robinson said the Act of 1878 dealt with title, not the right to practise dentistry—the title and description of the individual, and not the work which the individual executed.

Mr. Venning: There is no warrant to say the word "description" applies merely to the man.

Mr. Robinson: I have the Scotch authority.

Mr. Vennning: You have admitted that is not binding. The form of defendant's advertisement was quite sufficient to bring it within the meaning of the word "description in the Act. He could do what work he liked, but he was not entitled to let it go forth to the world that he was a qualified man and entitled to do skilful work.

Mr. Venning quoted cases from the *British Dental Journal* of 1902, which were heard at Cardiff, Merthyr, Melkshaw, Derry and Worcester, in which fines were imposed, and Mr. Robinson pointed out that in the Cardiff case the defendant called himself "Cardiff's Merciful Teeth Extractor," which surely was a personal description.

Mr. H. Lynde Caunter (magistrates' clerk): I do not know whether the facts are admitted.

Mr. Robinson: Yes; we admit the facts that there was a door-plate and the cards were issued.

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### The Decision.

The Bench consulted together in camera for half-an-hour, and on returning the Mayor said the Bench looked upon it as a highly technical matter, but by a majority had decided to dismiss the case.

Mr. Robinson applied for costs, as his Society has been put to great expense, but the Bench thought as it was a case in which lawyers disagreed, each should pay his own costs.

Mr. Venning said that it might be that the British Dental Association would require a case stated, because he took it that the Bench's decision was based on the opinion that the words on the plate and card did not mean a "description" within the meaning of the Act.

Mr. Robinson: Now you are doing what they did at Kettering.

The Mayor: We shall be prepared to state a case.

Mr. Venning: And it would be on that point?

The Mayor: We need not give ourselves away.

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## AN ECHO IN THE HIGH COURT.

In the course of the hearing of a case in the Divorce Division of the High Court recently a witness, who described himself as a dentist's assistant, was called when the following dialogue ensued:

The President (Sir Gorell Barnes): Are you a qualified dentist?—No.

Sir Edward Carson: And Mr. Goodman is not a qualified dentist?—No.

Did you operate?—Yes.

Did you give anæsthetics?—Yes, sometimes.

The President: I do not understand this. There is a Statute affecting dentists. There is a case on the subject in the Court of Appeal.

Witness: I do not call myself a dentist.

Mr. Gill, K.C.: It is only a few years since dentists were registered.

The President: There is a penalty if you pose as a dentist.

Mr. Gill: You may do as much business as you please

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providing you did not call yourself dentist. "Teeth" is the word used. There is an enormous number of businesses of this kind.

Sir Edward Carson: A great author has called them "gum architects."

## AN ANÆSTHETIST'S FEE.

At Yarmouth County Court Dr R. H. Shaw, King Street, sued G. Waterson, to recover £1 8s. 6d. for professional services. Mr. Blake appeared for plaintiff.

In 1907 defendant had a swollen jaw, and went to a dentist, who declined to extract a tooth. He then saw Dr. Shaw, who told him to go to another dentist and have the tooth out. Next morning he presented himself there, Dr. Shaw gave him an anæsthetic, and the dentist extracted the tooth. Defendant paid the dentist half a guinea. Dr. Shaw claimed a guinea for the anæsthetic, and 2s 6d. each for the first consultation, and two that succeeded the extraction. Defendant now complained that he thought his jaw was broken as the bleeding did not cease until two pieces of bone came away, and he declared he had a swollen face for seven months.

His Honour said no blame attached to Dr. Shaw.

Defendant—I never thought it would cost me £2 to have a tooth out.

His Honour—I don't see how you can dispute the doctor's claim.

Defendant said he was sorry he could make no offer at present.

His Honour gave judgment for plaintiff.

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Inserting and Finishing Gold Foil Fillings.—The placing and malleting of gold is a most important factor. I believe that the cause of many failures can be attributed to improper placing of the gold. The knack of adapting and condensing gold by hand pressure is familiar to few. Were it more generally adopted, I believe we would have fewer failures. The finishing of these fillings is not the tedious and

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distressing operation that it is pictured. The carrving of our margins well to the buccal and lingual makes the finishing of these margins very easy ; the intelligent use of the saw and strip soon finishes the gingival; the broad step on the occlusal soon gives way to the stone and disk, and the whole operation from start to finish seldom takes over an hour, and when complete we have a filling in perfect contact with tooth surface, with enamel prisms safely guarded, seated so that it resists stress and not dependent on the fickleness of cement to hold it in place.—*Don M. Gallie, Chicago.*

# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

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British Journal of Dental Science

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# SOME NOTES ON THE GROWTH OF THE JAWS.*

By James T. Carter, L.D.S.

I have chosen the subject of "The Growth of the Jaws" knowing full well that there are many members of this Society far more competent than I am to deal with it. But there are some aspects of the case which I think have been insufficiently commented upon. The consideration of the development and growth of the jaws, and of the variations and of the correlations which exist between the jaws and other facial and cranial bones, forms a subject of great interest to all dentists. Fortunately for us as a profession, the consideration of this same subject is also of great importance to anatomists, anthropologists, and others, so that the problems surrounding it are being investigated by a large and growing body of workers. To deal with the whole question of jaw growths one must consider :—

(1) The development of the maxilla, premaxilla, and mandible, also the normal changes which take place in these bones after birth.

*Transactions of the Royal Society of Medicine, Odontological Section.



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(2) The relation of the jaws to other facial and cranial bones, together with osseous and muscular variations.

Then, with some definite knowledge concerning the elements of the face and cranium, we are able to turn to (3) the examination of large groups of individuals, and to endeavour to establish correlations. And, lastly, there is (4) the physiological aspect of growth. This forms far too great a field for me to attempt to deal with, but I hope the few notes I shall give this evening will be of interest.

The first point to which I would draw attention is to the development of mandible, maxilla and premaxilla. Professor Edward Fawcett, who has done a great deal of work on the development of cranial and facial bones has kindly furnished me with particulars of his investigations into the development of the maxilla and of the mandible, and though many of his conclusions and results are as yet unpublished, he has given me permission to make reference to them. His researches were carried out by means of serial sections, and the use of the reconstruction method. Thus he was enabled to eliminate the sources of error which misled earlier observers.

In the mandible Meckel's cartilage is somewhat late in its appearance, not becoming cartilaginous until after the femur, though its *anlage* is visible in the 12 mm. to 15 mm. embryo. When formed the two cartilages, seen in horizontal sections, form a horseshoe, incomplete at first, being separated by an appreciable interval. Soon, however, they meet in the middle line, and later usually overlap one another there. Each cartilage is thickened in the vertical sense on each side of the future symphysis. If we trace the cartilages backwards from this anterior thickening, we find that they form a large bend with the convexity outward, and still further backward form another bend with the

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concavity outward, before ending in the malleus. The latter bend is found in front of the Eustachian tube. In its concavity lies the inferior dental nerve, and against its convexity the lingual nerve.

Ossification commences in front of the anterior expanded end of Meckel's cartilage, and the incisive branch of the inferior dental nerve, and extends backward under the mental nerve as a strip of bone rapidly diminishing in thickness. At this time there is no sign of development of an inner alveolar border. The inner alveolar border arises by ingrowth from the main mass just behind the mental nerve, in the form of an obliquely directed shelf, coming to a point behind the lingula, and this shelf passes between the inferior dental nerve and Meckel's cartilage, which it overhangs. At no time is it completely separate from the main mass. In other words, there is no splenial centre. At first there is no inner alveolar border behind the incisive nerve, but a shelf grows backwards over Meckel's and under the incisive nerve near its origin from the inferior dental nerve. Thus the inner alveolar border arises from the main mass in two ingrowths, the first under the inferior dental nerve, enlarging in the backward direction and terminating in the "lingula," the other growing under the outer end of the incisive branch of the inferior dental nerve and extending inwards towards the middle line. Ossification begins in Meckel's cartilage about the tenth week in the region of the foramen and gradually extends inward, so that the portion of the jaw between the mental foramen and the symphysis is partly cartilaginous, partly membranous. This is the only portion of Meckel's which undergoes ossification, for posterior to the mental foramen the cartilage undergoes atrophy. The canal for the nerves is completed by the growth of spicules from one alveolar border to the other over the top of the nerves, the mental nerve being first so covered, then the incisive, and

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much later the inferior dental near the permanent inferior dental foramen. An accessory mass of cartilage, quite independent of Meckel's, appears to form the condyle proximally, whilst it tapers away distally to a point terminating in the root of the coronoid process. This plug of cartilage is enveloped everywhere, except at the condyle, by membrane bone, and is ossified itself very early. Another patch of cartilage appears along the anterior border of the coronoid process, also quite independent of Meckel's and the condylar wedge. Kollman has shown that other patches of cartilage occur at the angle and also along the outer alveolar border in the neighbourhood of the incisor and canine teeth, but according to Professor Fawcett's observations, this is not ossified independently (this patch on the incisor region is of interest in view of the opinion of Professor von Bardeleben, that the chin in man and other mammals is a distinct element). In all probability these cartilaginous plugs do not represent separate morphological elements, but are adaptations to the growth of the jaw. Thus we find that the lower jaw is developed in membrane as a single element, and the old view, which held that there were a number of separate centres of ossification, homologous with the elements of the reptilian jaw, is incorrect.

The maxilla arises as a membrane bone exterior to the cartilaginous nasal capsule, and in the neighbourhood of the canine tooth germ, by one centre of ossification. Its first appearance is in the fœtus of about 18 mm. in length, and it is the third bone to appear, the clavicle being first and the mandible second. From this centre three processes rapidly radiate out—

(1) A nasal process which grows upwards.

(2) An alveolar process which grows downwards, is thickened at its root to form the malar process, and might be called the alveolo-malar process.

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(3) A palatine process which grows inwards.

The alveolar-malar process grows backwards, fork-like, and between the two limbs of the fork the anterior dental nerve grows in order to pass forwards under the alveolo-palatine angle of junction. These parts are all well developed at 19 mm. At about 32 mm. cartilage is developed in the outer alveolar border in the neighbourhood of the milk molars, and this cartilage is ossified by extension of bone from the main mass. Soon after this the internal alveolar border appears as a down-growth from the palatine process. At this stage the bone is very flat behind the nasal process and the eyeball is only separated from the tooth-germ by a thin plate of bone. At first the infraorbital nerve lies on the top of the orbital surface, but, later, ridges of bone grow up on each side of it ultimately meeting over the nerve and forming the infra-orbital tunnel. Frequently a suture remains here which has been erroneously taken by Sutton, Polot, and others to indicate double ossification.

The antrum of Highmore appears as an outgrowth from the cartilaginous nasal capsule and separates the orbital floor from the roof of the tooth crypts; consequently this raises the total height of the maxilla and alters its form. The maxillary antrum at first is lined by cartilage, but later this undergoes atrophy and a mucous lining alone remains.

With regard to the ossification of the premaxilla, Professor Fawcett found great difficulty owing to its very irregular appearance, which is usually just after the maxilla, *i.e.*, about 19 mm., in the form of small scattered masses of bone especially congregated over the two incisor teeth and forming a sort of bridge over the interval between these teeth. From that portion in the neighbourhood of the lateral incisors a part of the outer alveolar border is early formed, likewise a part of the nasal process. Union between the premaxilla and maxilla commences soon afterwards at 22 to 24 mm., at

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the alveolar border and extends upwards into the nasal process. At a later stage, about 50 mm., the premaxilla consists of two parts: (1) a processus lateralis or facial part and (2) process medialis, which runs backwards on the mesial side of Stenson's canal. This mesial part—the so-called centre of Rambaud and Renault—is not a separate centre of ossification, at any rate normally, but is simply a backward growth of the premaxilla, and its mesoblastic *anlage* is easily to be seen growing backwards and upwards from the premaxilla. In many quadrupeds it is ossified independently. At 42 mm. there grow backwards from the facial portion of the pre-maxilla, two wedge-like processes to meet the palatine processes of the maxilla proper which cause the two sutures one sees on the under surface of the whole bone at birth and later. So it will be seen that the maxilla develops from one centre only, and that the premaxilla also has but one centre. At first there is no anterior alveolar wall to tha two incisor teeth, and the anterior dental nerve may be seen sweeping round to the front just over these teeth; later a downgrowth of bone takes place and hides teeth and nerve from view.

*To be continued.*

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# OPEN WINDOWS AND ADENOIDS.*

By J. Sim Wallace, M.D., D.Sc., L.D.S.Eng.

Hon. Dental Surgeon to the West-End Hospital for Nervous Diseases.

The simplest, most definite, and most important truth which preventive medicine has been teaching during the last few decades has been the value of fresh air. This fact has justified many a monograph dealing with the general amelioration in health which has resulted. Curiously enough, the historical or evolutionary justification of the doctrine has not received the attention that such an important principle demands. I do not intend to attempt to supply this want. At the same time I must allude to it, for it was, paradoxical as it may seem, the consideration of this subject which led me to believe that we are not justified under all circumstances in advocating fresh air without any reserve. Moreover, a consideration of the evolutionary justification gives also a rough guide to the limitations, or rather safeguards, which have to be observed under special circumstances. If we look back at the evolution of man, we see that he is undoubtedly and essentially a fresh air animal. Our relations, the monkeys and the anthropoid apes, are animals which specially indicate an urgent need for fresh air if they are to be kept in perfect health. Their arboreal *habitat* has from all time fitted them for fresh air, and when brought to confinement, as in zoological gardens, the absolute necessity for thorough ventilation in their houses is now recognised. Moreover, like ourselves, the monkey tribe is specially susceptible to succumb to certain diseases which are almost innocuous to such animals as rats and

* Published in *The Medical Press.*

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mice, which may be taken as types of animals not requiring perfect ventilation to keep them in good health. There appears to be one thing, however, in which we differ from our anthropoid relations in respect to *habitat*. Man is not solely a tropical or sub-tropical animal. To him almost all regions of the globe are habitable, while anthropoid apes, at least, seem quite incapable of living for any time, even in temperate regions, except when most carefully protected from the inclemency of the weather. So, too, perhaps, it was with man before he became more highly differentiated from these animals, until, indeed, his intelligence, his clothing and housing, such as it originally was, allowed him gradually to live in countries less and less tropical. And although at the present day man is adapted to live in northern climates, yet the essential similarity to our anthropoid ancestors is still to be seen in a heavy mortality from the very disease to which monkeys are susceptible when they are brought to live in these climates. It does not need any argument, indeed, to show that man without house and clothing is not fully adapted for all the climates in which he lives. This applies even more strongly in the case of infants and children, who are unable to stand exposure so well as adults. We are certainly justified in saying that ever since man commenced to depart from his tropical *habitat* he must always have had some protection, especially for his children, against the less congenial climates. In other words, a house and clothing become necessities of life. At present I intend to refer only to the house. It was until recently a primitive protection, perhaps, but it had this merit—it was always, with the help of the other primitive comforts obtainable, enough to allow for the continuity of the race. It may have had its faults, it may have been insanitary, it may have been ill-ventilated, especially among cave-dwellers, but, on the whole, ts utility justified its existence. Probably many millions

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have perished on account of the faults of hygiene referred to, and perhaps during the same period man may have become better adapted to his climatic surroundings, although infants and children which were necessarily kept more strictly under the protection of the house may not have become so fully adapted.

What is of special importance to note, however, is that the house existed as a protection against certain extremes or kinds of climatic conditions which are inimical to the well-being of the human body. It may here be said that these kinds of climatic conditions to which I refer do not exist in tropical or sub-tropical regions, so that we as animals had not in our primitive state become adapted to these climatic conditions. It would appear that cold and damp are in general never associated in the tropics. In many tropical localities where the atmosphere is clear, dry, and still at night, radiation is rapid, and very considerable cold may be experienced; but during rainy and damp weather the temperature does not fall to anything like the same extent. When we consider cold and damp, however, such as, let us say, are exemplified in our fogs from November till March, we begin to see something differing from tropical climatic variations, and are justified in doubting if man is altogether adapted for them.

Now let us consider what habit and instinct appear to show. It is hardly necessary to refer to the fact that fires are universally used in cold weather, and this in spite of the fact that it is a more expensive method of maintaining heat than by shutting out the air and heaping on clothes. Now the fire has three attributes to which I would refer. First, it provides warmth; secondly, it ventilates; thirdly, it reduces the humidity of the air. Thus fires are beneficial from all these three points of view. It has not required the advances of science to induce people to put on fires. They instinctively do so. The advances of science have, however, been necessary

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to induce people to appreciate as thoroughly as they should the benefits of fresh air. But the fresh air doctrine has during the last thirty years been taught with effect, and among the educated classes there are few who do not appreciate it. In fact, it seems to have become a sort of cult, and, notwithstanding the fact that there is an instinctive tendency to shut windows on cold and damp nights, the doctrine of fresh air winter and summer has now become part of the educated man's faith. But here is where a protest must be made, not because of the insistence on fresh air winter and summer, and night and day, but because of the method most commonly employed to secure it. The neglect to prevent the cold and damp from accompanying the fresh air must be regarded as a serious error. In other words, it is not right to attempt to ventilate a room by simply keeping the windows open if the weather is cold and damp. There are several diseases which the medical profession recognises to be in some way associated with cold and damp, such as catarrhs and rheumatism, but I only wish to refer to one at present—namely, "adenoids." This disease has apparently increased in frequency with prodigious rapidity in recent years, and, what is certainly very suggestive, its increase seems to have been concomitant with the cult of open windows night and day, summer and winter. Moreover, my observations would appear to indicate that the proportion of children affected with adenoids is distinctly greater among the more educated classes who are most scrupulously insistent on keeping their windows open at night throughout the year. Children brought up with open windows appear, indeed, to be about fifteen times more likely to contract adenoids than those who sleep with the windows shut on cold and damp nights, or at least than those who sleep with closed windows throughout the greater part of the year. The few figures which I have so far been able to obtain are as follows :—Of 69 who slept

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with closed windows, two cases of adenoids were found, while of 49 who slept with open windows at night, winter and summer, 22 cases of adenoids were found. *It will be seen from the above that adenoids appear to be confined almost entirely to those children who sleep with open windows;* but, notwithstanding this, it must not be thought that there are no other contributory causes, or that I abandon altogether the other factors connected with clothing, perspiration, digestion, and the development of the palatal arch which I have previously referred to elsewhere. It would probably be more satisfactory, therefore, if in the collection of further statistics the relative frequency of adenoids were considered class for class and not one class against another, where the other conditions, such as housing, fires, clothing, etc., may be essentially different.

When we consider the question from the point of view of physiology and pathology, and what is already known with regard to the etiology of adenoids, we find that the same conclusion must be arrived at. The first point we have to note is that cold air, especially when damp, causes a certain amount of congestion and catarrh of the mucous membrane of the nose and nasopharynx, and although it may be foggy, and on that account specially objectionable to breathe the air directly into the lungs, we tend more than usually to breathe through the mouth. If the stream of cold air is made greater—as, for example, during considerable muscular exertion, then the congestion and simple catarrh is augmented. Those who skate need hardly be reminded of this. Now, if it is conceded that cold and damp air induce congestion and catarrh, then, if continued sufficiently long, it will tend to produce thickening or hypertrophy also. But, in addition to this, it seems undeniable that the specific catarrhal inflammations are more readily contracted when the mucous membrane is congested from irritation by cold

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and damp air, and therefore tend to increase the hypertrophy.

Referring to acute catarrhal pharyngitis, De Schweinitz and Randal say, "Exposure to cold really means lessened resistance of the tissue to germ vitality and germ entrance into the substance of the membrane." And, referring to acute naso-pharyngitis, they say :—"Exposure to cold and damp plays the chief exciting *rôle*. Here also should be borne in mind what has already been said regarding such exposure as related to temporary repairment of tissue vitality. As occurring in very young patients, we generally find acute naso-pharyngitis associated with more or less enlargement of the pharyngeal tonsil, which in turn may have resulted from repeated attacks of acute rhinitis."

Whether the above considerations are considered valid or not, it is a fact that cold and damp localities are usually recognised as at least a predisposing cause of adenoids, and if the above explanation is correct, then, instead of cold and damp localities rendering the individual susceptible to adenoids in some vague constitutional way, we see that cold and damp localities cause adenoids, from the simple fact that the cold and damp air is the primary exciting cause itself.

Next, when we consider heredity, we read, for example, in Mr. McLeod Yearsley's book on adenoids, that, "although it cannot be positively said to be hereditary, hypertrophy of the pharyngeal tonsil often shows a distinct tendency to affect several members of the same family." This is a significant fact, and indicates, in my opinion, that the mal-environments of certain families tends to produce the disease in each member of the family. If then, "it is by no means uncommon experience for the surgeon to have to operate upon two, three, or even four or more in the same family for adenoids," and since "this fact has been referred to by nearly every writer of any consequence upon the sub-

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ject," then it surely is evident that there must be a something in the nature of a very definite and direct cause of of adenoids in some families, and that this definite and direct cause is absent in other families. That the definite and direct cause is cold and damp night air seems probable. If we consider treatment, a similar conclusion is enforced. Surgical treatment is recognised as being very satisfactory, although recurrence sometimes happens, but medical treatment—notwithstanding the tendency for the hypertrophied tissue to shrink—seems to be attended with very unsatisfactory results. If medical treatment does not recognise the cause, and if such directions are given as "especially should it be insisted upon that the child shall sleep in a room directly open to the outside," then, in a climate such as ours in winter, medical treatment will probably be unsatisfactory.

It was a consideration of several of the above facts that led me to doubt the advisability of open windows at night in cold and damp weather, and it did not surprise me to find that a direct investigation into the relation between open windows at night and adenoids resulted in the figures which I have already given. Although the relationship seems to be unquestionable, yet, having regard for the other conditions and predisposing causes, I am of opinion that a more extended investigation will not reveal such a startingly close relationship, especially in those localities which are (unlike the Thames Valley, to which my figures specially refer) relatively free from cold and damp night air.

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SUDDEN DEATH.—Mr. Holway, dentist, Honiton, died suddenly while reading to his wife. Deceased, 53 years of age, had been suffering from an affection of the heart, but had been much better during the last few days. He leaves a widow and a grown-up daughter.

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British Journal of Dental Science.

LONDON, APRIL 15, 1908.

# "SPECIALLY QUALIFIED."

MANY of our readers have followed the arguments which have appeared in our Editorial Articles for some time past against seeking fresh legislation, and urging that the Dentists' Act of 1878 should be further tested. They will recall that we have insisted that the words in the Act forbidding unregistered practitioners holding themselves out as "specially qualified" was capable of a more stringent interpretation than had as yet been placed upon them by the Law. Attempts to uphold this have been made; in fact in our last issue we published such a case heard at the Liskeard Borough Police Court. In that case the Bench were much divided, and finally resolved to dismiss the action, but were prepared to state a case for a higher court. Since then an action has been heard at the Marylebone Police Court in which the Magistrate upheld what we have always considered to be the obvious meaning of the words in the Dentists' Act. We publish the case in full on another page, but we will now briefly touch on its main features.

Henry John Barnes, of 38, High Street, Marylebone, was summoned before Mr. Plowden for unlawfully taking and using certain descriptions, implying that he was specially qualified to practise dentistry, whereas in fact he was not registered under the Dentists' Act, 1878, and was not a legally qualified medical practitioner. Mr. R. W. Turner, barrister, prosecuted for the British Dental Association; and Mr. F. E. Smith, K.C., and Mr. H. H. Curtis Bennett defended. The words complained of were:—"H. J. Barnes.

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Finest artificial teeth at moderate prices. Extractions. Advice free. Hours 10 to 7. English and American teeth. Painless extractions." These descriptions, said counsel, were put up in different parts of the defendant's premises, and inasmuch as they implied that he was a skilled person, and led people who went to him to believe they were getting the benefit of skilled advice, he had brought himself within the Act, and was liable to a penalty of £20. Mr. Smith, in defence, pointed out that there were a large number of persons who were lawfully engaged in dental practice without being registered or qualified, and the only thing that could be said against the defendant was that he had held himself out as having skill. Mr. Plowden, referring to the defendant's claim to extract teeth without pain, said that that was not to be dismissed as a mere act of skill, it was the exercise of the highest possible skill, and implied the very highest qualifications. He held that the defendant had deceived the public into a belief that he was specially qualified within the meaning of the Act, and he therefore fined him 20s., with £3 3s. costs. Mr. Smith asked for a case to be stated, and Mr. Plowden acquiesced.

We hope that the case will be taken to a higher Court, and that Mr. Plowden's ruling may be upheld. It depends to a certain extent on the exact meaning of the word "qualified." We are accustomed to speak of the L.D.S. as a "qualification" and of the possessor of that or some other medical or dental diploma as a "qualified man." If the law holds that the term "specially qualified" means "possessing a registrable diploma" then it is probable that the case would be lost, as there is no proof that Barnes pretended he had a diploma. But if the words "specially qualified" mean "possessing the skill attained by those who have submitted themselves to the curriculum of the licensing bodies and of which the registrable diploma is the sign" then we have no doubt the decision of the Magistrate would be confirmed. To the ordinary man the words used by Barnes convey the impression that he is a "dentist" and therefore those words are calculated to deceive.

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It may be said that many practitioners on the Register have been through no curriculum and that consequently the argument fails. But in reply to this objection we urge that special conditions were granted to those in *bona fide* practice thirty years ago, and that the obvious intention of the Legislature was that no further conditions of the same kind would be tolerated in the future.

We shall watch the further development of the case with the greatest interest.

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Dentists and Life Assurance.—In an address on some of the medical aspects of life insurance Sir James Barr said that a foul mouthed individual is liable to many troubles, and he is a greater danger to himself than to others. The nose, mouth, and bad teeth afford a large culture field for the growth of many pathogenic organisms which are ever ready to attack the individual when his resisting powers are lowered. In the mouth and throat organisms are bred which give rise to such fatal diseases as pneumonia, pernicious and other septic anæmias, etc. If the insurance companies added to the premiums one-eighth per cent. for every bad tooth in the applicant's head they would do some good to the dentists, and lessen their own risks. The great increase in recent years of diseases of the digestive tract, such as cancer of the stomach and large bowel, appendicitis, etc., are largely due to dietetic errors and constipation.

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Children's Defective Teeth.—At Oxford Education Committee a letter was read from Dr. Summerskill, asking for permission to inspect 100 children in two of the schools in connection with investigations he was making as to the prevalence of dental disease amongst children in Ilford, with the view of promoting a Dental Hospital; but the committee, after consideration, could not see their way to recommend the granting of the request.

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ASSOCIATION OF REGISTERED MEDICAL WOMEN.—At a recent meeting Miss Handley, in a paper dealing with teeth in relation to general diseases, showed how frequently oral sepsis was the cause of severe obscure illness, and quoted cases where symptoms resembling typhoid fever in an adult and tuberculous meningitis in a child had cleared up when the condition of the mouth had been attended to. Miss Stoney showed some radiographs of teeth and stoppings, illustrating the need of filling the whole of the pulp cavity of the tooth, and demonstrating that in certain cases where this had not been done an abscess cavity had formed in the bone at the base of the fang of the tooth.

BAD TEETH AND CANCER.—At a Stepney inquest it was shown that a man named Joseph Gill, 61, of Dakin Street, died from exhaustion from cancer of the tongue, which had arisen from bad teeth.

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USEFUL GUARDIAN.—At the Lambeth Guardians' meeting Mr. Dunkin (vice-chairman) offered to do some dentistry for a poor boy anxious to join the Navy. The Rev. W. Hobbs remarked that their vice-chairman was an ideal guardian, and had put in working order the teeth of many poor persons. The board accepted the offer of Mr. Dunkin.

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CHILDREN'S DENTAL HOSPITAL.—Although nothing has been done towards the provisions in London of a dental hospital for school children, the matter is under consideration, and a definite decision may be arrived at during the year. Dr. James Kerr, medical officer to the Education Committee, in the course of his last report mentioned that out of 700 infants examined at the time of admission to school only twenty had no obvious decay of the teeth; many of them had just a few stumps, and others had only two or



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three teeth. "The chances of healthy childhood," he added, "are small for most of those infants, although the popular idea seems to be that milk teeth do not matter. At present there is no hospital accommodation in London for more than 200 cases weekly—say, 10,000 annually—but at least ten times this accommodation would be required to relieve even part of the children whom school dentists would select as requiring it."

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CHINESE DENTISTRY.—How crude is the dentistry of the humbler inhabitants of modern china is disclosed by the Rev. John MacGowan in *The North China Daily News*. "Right in front of us on the street doctor's table is a small heap of human teeth. A patient came up to the doctor. On being asked what he wanted he replied simply by opening his mouth to the very widest extent. It was seen that his four upper front teeth were wanting. Measuring the cavity in the jaw, the tooth pedlar carefully selected from the heap the four teeth that would exactly fill it. He then drilled a hole in them longitudinally and inserted a bit of wire to bind them to each other. The ends of the wire were next inserted in holes that were drilled into the teeth on each side of the cavity and at once the chasm disappeared.

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# Abstracts of British & Foreign Journals.

## SOME PHASES OF SURGERY IN ROOT CANALS.

By R. E. Darby, M.D., D.D.S., Springfield, Mo.

Read before the Missouri State Association, June, 1907.

We cannot, all the time, deal with new methods and materials. At times, it is as much worth while to re-study an old problem or mode of procedure till its importance awakens in us a new interest. In this paper I have not attempted to relate anything startlingly new. It is rather a study of a prosy old subject that daily demands some kind of solution in nearly every dental office.

I can scarcely hope that you will all agree with me in what I shall say, for we are far from being agreed on what constitutes the rational treatment of root canals. Neither do I mean to say that there may not be more than one successful method of treatment for a given case. So I will ask you to think with me from my view-point for a little while, then in the discussion, turn on the light from other view-points if desirable.

In dealing with root canals, the fact that most of the field of operation is hidden often makes it a very delicate bit of surgery. It is as important for the operator to know the human make-up and functions in this field, as it is for the oculist in his field. We must keep in mind that we are dealing with part of the human anatomy, with its physiological functions or pathological conditions. The pseudo professional man who is wanting in both conscience and proficiency, may cover up many wrongs, but in most cases they will prove only palliative, not curative, and after a brief period the patient is driven by trouble more grave than the first to seek relief. Still, at other times, it is wonderful how the human economy can be imposed upon and tolerate an abomination while the operator empirically congratulates himself upon what he terms success. The intelligent close observer, must see in this, not a successful operation, but a wonderful power of endurance on the part of nature.

In this field of surgery, as in others, the operator must

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know not only how to cut, but when to cut, as well. If a tooth is opened containing dry mummified contents, it demands a surgical dressing, rather than extended excavation. It is much safer to seal for sterilization, for it may prove a slumbering volcano.

The dying pulp inside of closed walls is a condition often met. As soon as diagnosis can be made and trouble located, tooth opened and congestion relieved, relief from pain is given. Further treatment may be planned along usual lines. If, however, the patient is one day late in applying for treatment, something more serious may have happened, and relief from pain is not so simple. When the tooth is opened, instead of relieving a congested pulp or draining an abscess already formed, we find a putrescent pulp. There is foul gas and fluid. The former may have driven the poisonous ptomaines of the latter into the peridental membrane. There is peridental septicæmia. It is too late to abort it. There is left to us only the alternative of controlling its severity through its course. The dentist is in danger of losing his reputation, and the patient, after much suffering, may demand the extraction of the tooth or turn in disgust to the family physician for relief. The dentist's reputation for ability and the dignity of the profession demand that such cases be given the time and thought necessary. It is no use to bore for pus; it has not formed yet. It is needless and risky to remove contents of canals. Neither would it insure immediate relief to extract the tooth, Effective sterilizing may be accomplished by sealing in cavity without pressure, equal parts of phenol and forty per cent. formaldehyde. The gums painted with iodine completes the local treatment for the present. The pain caused by the poisoning must in many cases be controlled by systematic remedies. The official acetanilid compound is very effective, but must be prescribed cautiously if there is a weak heart. Physicians, as a rule, are cautious with the coal tar preparations, and properly so. Still, this compound acts better for many people than opiates, and the severity of the case calls for the effective remedies. It is not best to simply recommend to patients tablets of this or other drugs for the relief of pain, as it might encourage the formation of the drug habit. It is safer to prescribe as follows:

R Pulveris Acetanilid Comp. gr. xvi.
Ft. Chartulæ No. IV

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Sig.—Take one capsule at once, another in one or two hours, if not relieved from pain. The others four hours apart, if needed. There are liable to be complications and we meet also the family physician. If so, it is best for all concerned that we have a better understanding and more respect for what each is trying to do.

In treating all forms of abscessed roots, we cut heroically the first treatment. All secret chambers are opened and relieved of their contents, loaded with micro-organisms. Few, if any, restrictions are put upon our procedure in these conditions, but if there is a copious flow of pus, better not dam up the stream, even temporarily till after flood tide. There is no occasion for a nightmare over the question of coagulants or non-coagulants, for there is no albumen to coagulate. Most cases, if well drained, can be cured with the cleansing solution of *aqua pura*, plus nature. Still it is safer and saves time to sterilize. In some of these cases there is still an oozing of serum after normal conditions are restored. This is harmless and may be controlled with phenol, the root dried and sealed permanently. Nothing is gained and much lost in treating a tooth for months as some used to do. As a rule, normal conditions can be restored inside of two or three weeks; or perhaps as soon as appointment book shows time enough for a final procedure. A patient must not be allowed to think he is having a tooth treated when he is guilty of periods of neglect in which all that has been gained is lost.

Too many operators forget that the place to conserve tooth tissue is in the root. We can construct successfully new crowns, but so far we have not been able to successfully construct new roots. No operation on tooth crown can make a stronger tooth than the root on which it is constructed. Canals must be opened so apex can be sealed, or enlarged to admit dowel pin, but in either case, further cutting is in the direction of malpractice.

For the want of time, I pass the important treatment cases mentioned with but a hint as to proper management, so that I may have time to mention some details of instrumentation and permanent root dressing.

When the potassium and sodium preparation was announced to the world, in 1893, I considered it a great step in advance; but later almost discontinued its use, as I found other methods more effective in my hands for opening root canals. The sulphuric acid treatment promised

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much, but because of the associated peridental inflammation had to drop it, except in some rare cases of crooked roots.

Instruments are much used these days for opening root canals. The skilful use of them will do as much to shorten the laborious hours of the dentist as any other aid of our times. Others must be considered amongst the most dangerous instruments that have come into our hands. Many of the older, and some of the present, makes are too large and too clumsy, too much wanting in the possibility of application to be considered by the prudent dentist. Some tools advertised for opening canals would bore a hole too big for a dowel pin.

A broach for opening a canal should not be a drill. It must be remembered it is not our object to drill a hole, but enlarge an opening already there, so that the end of it may be properly sealed. The best instrument so far devised is a twist broach with a round point and does its reaming from the sides. It should be of very flexible tough steel. It should not be of the same diameter its entire length, but should taper as do the canals. Then it will prepare the opening so it can be positively filled and that without using a large, clumsy something to fill it with.

For comparison, I wish to mention two types of twist broaches: the Downey and the Kerr. The latter I unqualifiedly condemn for general purposes. The Downey is of a more scientific conception. It is well known that the company that make both of these has a man going over the country demonstrating their goods, who argues that the drill-pointed broaches should be used, as they clear themselves of debris, while the round-pointed push it through the apex. This may sound reasonable to one who has thought only about the subject and is without clinical experience or knowledge of laboratory tests. A convincing laboratory test may be made by selecting a tooth with a curved root, open it with a fine Downey broach, then instead of using medium-sized broach of same make, take medium of drill-pointed variety. It will not even follow where the other has opened canal, but will leave it at the curve and pass through the side of the root. Repeated laboratory tests will show that the hard, dry specimens of crooked roots can be perforated, operating the drill by finger movements. What,

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then, is liable to happen with the softer teeth in the mouth when the same kind of drill is driven by the engine? Even, if used cautiously and by finger movements, a root may be pitted, if not perforated so that no instrument will afterwards pass the curvature. A multi-rooted tooth so perforated and filled, the filling passing beyond the perforation, makes an ugly case for some innocent man at a later date to diagnose and treat. The X-Ray may be called in to locate the extended fillings, and they may be surgically removed from within or from without, but in some cases this is very difficult to do, to say nothing of what it means to the patient. It would certainly be better to avoid such necessity.

A reamer is one thing and a drill is another. Is it not time to call a halt on the drill method of procedure? The method of using the reamer is important. They should be selected in assorted sizes and with short handles so they can be manipulated with the fingers. Nothing can take the place of the cultivated, delicate touch. It being auger-shaped, must not be twisted deep enough in the canal to become fastened. Insert in opening, take a turn, then withdraw; then another turn, and withdraw, etc. It is surprising how this instrument will follow the windings of a small canal and with what rapidity and ease and safety the ordinary canal may be opened, when the fingers are trained to do it. A reamer of this style will cut away nodules along the canal walls. It makes elliptical or flat openings round or at least the apical one-third is made approximately round. This makes sealing apex with a round point possible. It removes the diseased tissue along the entire canal, which results from chronic abscess. They are ideal for carrying shreds of cotton to dry canals or to carry hydrogen dioxide for swabbing, or medicine to seal in root. For the latter cotton is wrapped loosely, insert in canal and with a turn unwinding and at the same time pull against the side of root, medicated cotton is left. They furnish the best means of applying both cocaine and pressure to upper third of sensitive canals. For this the cotton serves the further purpose of helping in the removal of particles of pulp tissue. The many uses to which this broach can be put greatly restricts the use of the barbed extractor. This all seems so simple and commonplace to one who has long used this method, it hardly seems worth while to relate it. Still, many who choose this method do not properly employ these aids.

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The permanent root dressing should seal the canal perfectly. No dry cone alone is apt to hermetically seal apex. Some medium must be used that will adhere to canal walls, such as chlora-percha or cement. If chlora-percha is used, only a small quantity is needed. There is no advantage in using enough to make the operation sloppy. For carrying the liquid part of filling to place, I have found no better instruments than an assortment that can be made in a few minutes from old broaches of Donaldson type. Cut off part of barbed portion, place two sandpaper disks, grit sides together, carried by engine, turn broach at same time between disks and it is shaped as desired in a moment. Bend at obtuse or right angle and carry in broach holder. Or the liquid part of filling may be carried on small twist broach to all parts of canal by rotating backwards.

Gutta-percha points should taper like the instruments used in reaming the canals. If the cone tapers too rapidly, it will close opening into canal before apex is reached, leaving an empty space or if chlora-percha has been used it will shrink and leave a chamber which may gather and stagnate something from the blood stream, resulting in an abscess. For sterilizing, when not used with cement, the point of the gutta-percha cone may be dipped in a solution of equal parts phenol and formaldehyde before inserting into the canal. If apex is normal, root filling may be pressed quickly and firmly to place, but if apical opening is large, as found in teeth not fully developed, or from the action of an abscess, ascertain, as nearly as possible, its diameter with blunt broach, then cut off gutta-percha point accordingly, Moisten canal with chlora-percha and press gently to place, wait a moment for point to slightly soften, then pack tighter. Remove excess of gutta-percha as in all other cases with a warm instrument of suitable shape.

If a root is to be prepared for a dowel at the same sitting, better use cement. If a crown is set on a root before the chlora-percha at apex is thoroughly dry, the filling material may be so impacted as to cause a permanent unnatural feeling. A cement used for this purpose should not be one that crystallizes to a glassy hardness. It being so much harder than the tooth substance, has a tendency to force the bur through the side of the root. The gutta-percha point should be used in the cement.

It is unfortunate that any young man just entering the

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profession should be driven for want of means to seek employment in a dental parlour shop. There he must learn much of rush methods, the result of which is apt to prove a severe strain on conscience for approval. Haste, before proficiency is attained, is fatal. A habit of careless, slipshod, sloppy methods once formed is apt to insist on staying with the individual a lifetime, hence the importance of careful habits in all these things.— *Western Dental Journal.*

# Dental News.

## THE PRACTICE OF DENTISTRY.

### The Other Side of the Question.

The following letter has been written by H. E. Inglis to the *Western Mercury*:—

"After the mass of calumny and slander which the registered dental profession has been allowed to hurl through the Press at unregistered dental practice, it may interest the public to learn that the attack is nothing more than the outcome of a meeting of registered dentists recently held, to contrive some scheme for the combating of that competition which they—the registered dentists—found themselves unable to combat by fairer means.

In a plethora of invective, which does not even possess the quality of discrimination, and therefore libels all unregistered dental practitioners, a great deal has been made of the value of the title "dentist," i.e., of registration as a dentist, as a mark of recognition of the only persons qualified to attend to the dental requirments of the public. It must therefore be of great interest to learn the following solid facts—facts which I defy the most bitter partisan to disprove: that the register of "dentists" is half composed of men who have never passed an examination: that a great portion of them are quacks of the first water—men who have had no training whatever, many illiterates, foreign barbers, and all the scum of quackdom, who availed themselves of a registration which entailed nothing beyond a two-guinea fee and a written declaration. These men, to-day, legally

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trade with the title "dentist" or "surgeon dentist" written large on their name plates. Where, then, is the value of the title "dentist" to the person seeking skilled dental aid? Is this the class of men for whom some of your correspondents hold a brief?

Again, it will interest the public to learn that a great number of the honourable dental practitioners at present supplying Britishers with dental aid, though they do not claim the questionable privilege of being herded on the register with foreign barbers and illiterates, are men who by actual apprenticeship, practical skill and knowledge, length of years in practice, are members of an organisation known as the Incorporated Society of Adaptors of Teeth. These practitioners do not use the title "dentist" at all, yet membership of that Society carries with it actual proof of skill and ability, and the public would do well to place more reliance upon their practitioner being a member of this organisation (of which there are scores in the South-Western Counties) than upon any purchased permission to hang out the word "dentist."

So far as the absurd accusation that the unregistered dental practitioners evade the dental laws is concerned—the only Dental Act on the statute book deals with the use of title only, and does not touch the practice of dentistry at all. The attempt to construe it otherwise is obviously a tactic of the warfare that has been raging, a tactic intended to gull the public into a frame of mind to be impressed by the wholesale slander that unregistered practitioners are to be avoided.

Whence comes the great proportion of unregistered dentists? Are they not the one-time apprentices and assistants of those who now constitute themselves the owners of the dental universe? Let the public inquire whether the assistant who so ably conducts Mr. L.D.S.'s practice while Mr. L.D.S. is away golfing is registered or unregistered. In most cases, though it will be disputed, a little inquiry will prove that the assistant is not registered. Yet, it seems strange that when the able assistant leaves his lordly master and commences practice on his own account, the song goes forth that he is a quack and a person to be avoided. The fact of the matter is this, registered dentists are finding a great difficulty in obtaining assistants at all since so many prefer to paddle their own canoes rather than be ruled and paid paltry wages by a master, and this is part of the grievance

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which has stirred up the registered profession into a state of frenzy.

For a moment let the reader consider the isolated but unsubstantiated "'orrid examples" quoted by L.D.S. in your issue of Saturday week, following unregistered dental practice where patients have been subjected to malpractice. It seems grossly unfair to trot out such instances and to apply them as condemnatory of a whole class, but if such cases are to be sited, then the writer on the other hand has personally seen a record of verified cases, clearly set forth in all their hideous detail, of similar malpractice suffered by the public at the hands of registered men. Cases where the grossest carelessness and incapability have been exercised on patients led astray by the alluring title "dentist." Indeed, it is only a month ago that a patient was awarded £150 by Mr. Justice Lawrence against an L.D.S. for injuries and tortures extending over many months. Therefore, let not the correspondent who signs himself L.D.S. throw stones. Cleanliness in practice is a matter of individual conscience, not registration.

The public must not allow itself to be bluffed. The reason for the recent Press outburst is simply a way—a rather despicable way—of seeking to wreak injury upon a class of practitioner which is as dutiful and skilled in its methods and as much a public necessity as the attacking force. Quite recently in the House of Lords Lord Knutsford summed up an inquiry into the matter by remarking that there are good unregistered practitioners and bad ones; good registered practitioners and bad ones.

To-day the great bulk of the dental aid ministered in this country is ministered by unregistered practitioners, and no doubt their success is galling to those who now seek to injure them, and this attack upon unregistered practitioners, as I have said, is brought about by those who would monopolise the entire practice of dentistry and wax rich on the financial fruits of such a monopoly. It is a fact that the L.D.S.'s of this country are by reason of their fewness unable to execute one tithe of the work they wish to grab, and if it were possible to deprive the unregistered of their legal and moral right to supply the public with dental necessities, and to grant such a monopoly to the registered quack and the L.D.S., the public would be placed at the mercy of an organised scheme of extortion, simply because the work could not otherwise be coped with.

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Every honourable unregistered practitioner admits that the dental laws of this country require putting on a better basis, if only to remedy the anomalies everywhere abundant and to end the party strife; but even if existing laws are inadequate, it is no reason why the registered profession should over-value its position and hurl unmerited abuse at an equally numerous and equally useful class. At any rate, it appears deplorable that those who presume to be so superior should so exploit the lay Press in seeking to obtain an advertisement for themselves by such a malicious campaign of calumny against their competitors as has characterised recent publications, and it is only just to the more honourable members of the profession throughout the country clearly to state that the attack is unofficial, unauthorised by the British Dental Association, and is merely the handiwork of a clique.

However, the moral of it all, which must already be obvious, is that the exhibition of the word "dentist" or "surgeon dentist" is no guarantee of a practitioner's ability. The only guarantee is the recommendation of friends who have received treatment at the hands of the practitioner. It matters nothing whether he be registered and exhibits the word "dentist" or not. If an unregistered dental practitioner possesses a good name, and has established a practice upon it, all the slander and the outpouring of malice that less successful competitors may heap upon his head cannot alter the fact that his practice is concrete proof of merit and honourable dealing towards the public."

## EXETER DENTAL HOSPITAL.

### Annual Meeting.

The Mayor of Exeter (Mr. H. Gadd) presided over the 28th annual meeting of the subscribers of the Devon and Exeter Dental Hospital, at Exeter. The report of the committee stated:—3,477 cases have received attention during the past year, making a total of 127,723 since the opening of the institution, thus giving an average of 4,561 per annum. The income for the year has been £153, expenditure £186 3s. 4d., leaving a debit balance of £32 less £4 credit from last year, showing a total deficit of £28 2s. 11d. to be carried forward to 1908. The committee profoundly regret the

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resignation of Mr. J. T. Browne-Mason, who has left Exeter. In recognition of his valuable and lengthened services they have elected him consulting dental surgeon Mr. Clifford Silver, L.D.S., has been appointed dental surgeon in the place of Mr. Browne-Mason. It is with deep regret the committee record the resignation of Mr. Henry Yeo, who has been honorary secretary for nearly fifteen years. In recognition of Mr. Yeo's services the committee have unanimously elected him as a life governor of this institution, and also a member of the Committee of Management. The committee have elected Mr. W. A. Hooker as secretary to the hospital. Having gained some experience in the general routine during the period Mr. Yeo has held office, they feel assured he will carry out the duties for the welfare of the institution to the best of his ability.

The Mayor, moving the adoption of the report and accounts, said the hospital was now in a state of great efficiency, and also in a state of permanency, as they were now occupying their own freehold, thanks to the generosity of Mrs. Nosworthy. In Mr. Hooker he believed they had a new secretary in whom they could place the fullest reliance. It was to be regretted that whilst they had a decreasing income they had an increasing expenditure, and he hoped the benevolent public would not allow the work of such a deserving institution to be crippled through lack of funds. His Worship also moved the re-election of Mr. Harry Hems as president, and the Rev. the Hon. H. H. Courtenay, as vice-president. The Sheriff (Mr. H. H. Wippell) seconded the motion, and promised to become a subscriber. The motion was agreed to. Mr. Hems, in returning thanks for his re-election, said he was one of the founders of the institution 29 years ago. The hospital was never in a more efficient state than it was at present, and it said much for the economy practised there when they saw that nearly 4,000 cases had been relieved during the past year, at an expenditure of only £150. Preb. J. G. Dangar, D.D., Messrs. H. Campion and C. R Collins were re-elected members of the committee; Mr. J. M. Ackland, hon. treasurer; Mr. W. A. Hooker, secretary; and Mr. W. C. Knill, auditor. On the motion of Mr. Hems, seconded by Rev. the Hon. H. H. Courtenay, a hearty vote of thanks was accorded the honorary medical staff for their past services, and to the Mayor and Sheriff for their attendance. Rev. the Hon. H. H. Courtenay

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appealed for additional support from the country for the hospital, which treated patients from the country as well as from the city. It was a matter of regret that only one church offertory was received from the diocese. It was not fair that Exeter should bear the whole brunt of the work of the hospital.

## TRANSVAAL MEDICAL COUNCIL.

At a meeting of the Transvaal Medical Council the Council proceeded to deal with a complaint made by Captain H. R. M. Bourne regarding a refusal by a dentist to serve a native servant.

Correspondence was read showing that a native boy had been sent to Dr. Woodhouse with a note from Mrs. Bourne asking Dr. Woodhouse to let his assistant stop the boy's tooth, which he would on no condition have out, and from which he was suffering a great deal of pain. The boy had been sent back with an endorsement to the letter by Mr. H. G. Jarrett, reading: "Cannot possibly fill the Kaffir's teeth, bad enough to have to take them out." As a consequence of this reply Captain Bourne wrote to the Secretary of the Medical Council enclosing copies of his letters quoted above, and claiming that the "discourtesy is so flagrant that it may possibly be held to constitute unprofessionable conduct." Captain Bourne claimed that a question was raised which demanded the attention of the Council, whether a dental practitioner could object on general grounds to treat a native by stopping a tooth. This question he wished to put, without desiring to press the case against Mr. Jarrett. The letter stated that the native was a particularly clean and respectable boy.

After some discussion the Council resolved to send Captain Bourne a letter in the following terms: "As regards the specific instance quoted by you of refusal to give dental aid to a native, any professional man is quite at liberty to accept or refuse a patient or client as he thinks fit. The Council therefore does not consider that such refusal on the part of Mr. Jarrett, or the form of his reply, constitutes 'improper and unprofessional conduct.' With regard to the question put by you as to whether the unqualified objection of any practitioner to treat coloured persons is reasonable, the

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jurisdiction of the Council in such cases as that under review is limited by section 44 of Ordnance 29 of 1904 to the investigation of specific charges of alleged unprofessional conduct that may be reported: and it is not in the province of the Council to enter into a consideration of abstract questions which may be suggested by the circumstances forming the the basis of any such charge.

## ODONTO-CHIRURGICAL SOCIETY.

### Diet and the Nation's Efficiency.

The annual general meeting of the Odonto-Chirurgical Society of Scotland was held in the Edinburgh Dental Hospital, Chambers Street. Mr. C. F. Sutcliffe, L.D.S., South Shields, the president, in the chair.

The financial statement, which was submitted by Mr. L. S. Shennan, L.D.S., D.D.S., Edinburgh, showed that the credit balance of the Society at 9th March was £291.

### A Dental Library.

Mr. Robert Lindsay, L.D.S., Edinburgh, hon. secretary, submitted the report of the curator-librarian, Dr. W T. Finlayson, who was unable to be present. He reported that a fair amount of money had been spent in recent years in bringing the library up-to-date, and it was very gratifying to know that the presents they had received in the way of books and specimens had been greater than they had been before. The whole circumstances indicated that their library was getting into a thoroughly efficient condition. They were spending £40 in putting one of the rooms into a condition for the reception of their library, and for the services of their members who wished to consult it, and when it was completed he had no doubt they would have the most effective dental library outside of London.

### The Father of the Society.

Mr. Walter Campbell. L.D.S., Dundee, was admitted as honorary member of the Society. Mr. J. S. Amoore, L.D.S., in intimating the election, said Mr. Campbell's position in the Society was unique. He was the father of the Society. His name had stood on the roll for forty years, and it had always

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stood for all that was good and true, both in the ethics and the practice of his profession.

### Vegetarians and Endurance.

Mr. C. W. Cathcart, F.R.C.S., Edin., thereafter read a paper on "The Importance of Mastication for the Maintenance of Health." He said that the efficiency of the nation very largely depended on the question of diet. If men whose lives were a burden to themselves, and were seeking everywhere for health, could by the simple process of diminishing their diet be rendered efficient for physical work, then an enormous amount of ill-health and discomfort would be saved. The efficiency of an army very largely depended on the question of diet. They all knew that the Japanese were found to be one of the most efficient armies the world had seen, and the diet they adopted was of the very simplest, and comparatively small in quantity. Then it was—but this was a side issue—also very largely vegetarian. The question of a vegetarian diet was one which was coming very strongly to the front. It was no longer considered purely from a humanitarian point of view. The subject had been discussed and investigated by Professor Fisher and other scientists from the scientific point of view, and they had found that the endurance of vegetarians was greater than the endurance of flesh-eaters. There was a great deal in it, and probably they were correct. He was not a vegetarian, and was not speaking on behalf of vegetarianism, but he was trying to look at the question from a rational point of view. He believed if people would adopt the practice of a very thorough and careful mastication, and would teach their children that a great deal of disease and discomfort would be saved, and a great deal of the efficiency of the nation would be increased as a consequence. It was the work of dental surgeons to increase the mastication power of the people, and he trusted they would seize every opportunity of emphasising the importance of mastication.

Mr. Cowell, Edinburgh, in the course of the discussion endorsed Mr. Cathcart's remarks with regard to vegetarianism. He had examined the teeth of 180 recruits of Fort George, and of that number only two had decayed teeth. The teeth of the others were perfect, regular, and clean. Those men had never seen a tooth brush in their lives, and they lived on porridge and milk. They were hardy Highlanders, who had lived by fishing and crofting, and it would

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be very hard to find their equal when stripped for examination.

Mr. Cathcart said that the point raised by Mr. Cowell required careful consideration, because the teeth of those men could not be said to be in the condition described on account of the use they made of their jaws for mastication.

Mr. Cowell said the men he had spoken to on the subject had all told him they masticated their food. They said they would rather have no dinner at all than hurry over it.

Mr. Cathcart said he was glad to hear that, as it pointed to the fact that simple food and the mastication of the simple food were necessary.

A vote of thanks was awarded Mr. Cathcart.

Mr. J. Morris Stewart, L.D.S., gave a demonstration of "crown making and fitting with seamless crown outfits;" and Mr. L. S. Shennan exhibited a root trimmer for use with the dental engine.

### Who Was the First Dentist in Edinburgh?

The annual dinner of the Society was held in the Princes Street Station Hotel in the evening. Mr. Sutcliffe presided, and the croupiers were Messrs. R. Lindsay and J. Morris Stewart. Included in the company of about fifty were Professor Chiene, C.B.; Dr. Playfair, Vice-President of the Royal College of Physicians; Mr. C. W. Cathcart, F.R.C.S.E.; Dr. R. M'Kenzie Johnston, Dr. T. Shennan, Dr. F. J. Turnbull, Mr. Thomas Wallace, F.F.A.; Mr. Grant, president of the Glasgow Odontological Society; Mr. Oswald Fergus, F.R.S.E., Glasgow; Mr. W. Campbell, Dundee; Mr. G. R. Shiach, Elgin; and Mr. Cumming, Falkirk.

Professor Chiene, in proposing the toast of "The Odonto-Chirurgical Society of Scotland," referred to the library of the Society, and said when he was President of the Royal College of Surgeons he handed over to a society of dentists in Edinburgh the Naysmyth letters—the letters which passed between the first president of that Society and the Goodsirs. He thought it was to the Odonto-Chirurgical Society he gave the letters, and if he had given them to the Dental Hospital he had made a mistake. He was struck with a sentence which he had seen in their Transactions—"She can now use her jaw with considerable freedom, and the bite is fairly satisfactory." When he saw that he thought of a most de-



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lightful photograph he got the other day of an old lady, from whom Sime first excised the tongue. That would be a good thing for a lot of women nowadays. As they knew, he was interested in "Old Edinburgh." At present they were working up the early doctors. He wanted them to find out about the early dentists. Who was the first dentist in Edinburgh? They must have a hobby outside their profession, something to remove them from the tedium of their daily work, and he knew nothing better than digging into the past.

Mr. Sutcliffe acknowledged the toast.

Mr. Amoore proposed the toast of "The Royal Colleges of Physicians and Surgeons, Edinburgh." Dr. Playfair responded for the Royal College of Physicians, and Mr. Cathcart for the Royal College of Surgeons.

# Legal.

## A DENTIST'S BILL.

(Before Mr. Justice Grantham and a Special Jury.)

### Richardson v. Fremlin.

This was a claim for £570 3s., the sum alleged to be agreed for professional services rendered to the defendant's wife as a dentist. The defence was that the charges were not fair and reasonable, that no agreement had been made as alleged, and that if such agreement was made it was made on the representations of the plaintiff that the work to be done was of very great and exceptional difficulty, and that he would put in a class of work that no other dentist in Europe could do, and would do the work speedily, and that a removable bar would be fixed, whereas the defendant alleged that the work was not speedily done, the bar was not removable, and the work was work that any reasonably skilful and properly qualified dentist could have done.

Mr. Atkin, K.C., and Mr. E. G. Palmer appeared for the plaintiff; and Mr. Lush, K.C., and Mr. R. W. Turner for the defendant.

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Mr. ATKIN, in opening the case for plaintiff, said that this was a claim for £570 3s. for professional services rendered as a dentist. Dr. Richardson, the plaintiff, occupied a commanding professional position, and had a very well-to-do *clientèle*. He had received his training in America, a country in which he might say, without the risk of arousing any international complications, the teeth of the inhabitants were somewhat bad, and in consequence the dentists there very good. Mr. Richardson had arrived at a position in his profession in which he was able to charge, and did charge, two guineas for half an hour's work. The defendant was a gentleman of good position living at Maidstone, and the work was done for the defendant's wife. An agreement was made before any work was done, and all the work and the charges therefor were gone into in detail. Two guineas was to be paid for each half-hour's surgical operative work, in addition to charges for mechanical work. The amount claimed included an item of £389 11s. for 185½ half-hour's work.

Mr. Lush ; that is equal to four days and a night if the patient sat in the chair all the time without moving.

Mr. Atkin : Mr. Richardson had made a name for himself in what was known as bar and bridge work ; and the jury would hear the actual details of the work done, which, he was afraid, would awake unpleasant memories in some of them and make them very uncomfortable. Unfortunately, Mrs. Fremlin's teeth, before the work began, were abscessed ; and, though she was as plucky as ladies generally were, it was necessary that the nerves should be killed before the work could be done. This work alone took from November, 1904, until March, 1905.

A juryman : Did the plaintiff give Mr. Fremlin any idea of how long the work would take ?

Mr. Atkin : It was at that stage very difficult to make an estimate ; and no defence that too long a time was charged for was set up. The charges for mechanical work amounted to £180 12s., and those for surgical and operative work to £389 11s. When the account was sent in, asking for a payment on account, the defendant replied, making no suggestion that the agreement had not been made, or that he ought to pay less, but only suggesting that the amount was very large, and asking for an account.

Mr. Justice Grantham read out some of the items in the

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account, and drew attention to a certain charge for stopping a tooth.

Mr. Atkin : That took an hour and a half, by no means a long time for such an operation. I do not think that your Lordship has ever undergone that operation ?

Mr. Justice Grantham : Oh, haven't I. There is hardly any dental operation which I have not undergone.

Mr. Atkin : In one of his letters the plaintiff stated that he looked upon the work done in Mrs. Fremlin's mouth as the most marvellous on record. The defendant eventually proposed that the question should be submitted to the arbitration of two dentists ; but Mr. Richardson, who was claiming on an agreement, felt that that course would not be satisfactory, and had brought his claim into Court. Apparently the suggestion would be made that the defendant ought not to pay at the rate of two guineas per half hour, because he did not know how long the work was going to last. No dentist would venture to say beforehand the time the work, if to be satisfactorily done, would last. No complaints were made during the progress of the work as to the charges, although the defendant knew what they would be, and the plaintiff was led on from day to day. There was no suggestion whatever of negligence or that the work was improperly done or was delayed.

Dr. Edwin Joseph Richardson, L.D.S.R.C.S., England, the plaintiff, examined by Mr. Palmer, said he practised at Brook Street, Grosvenor Square. Mrs. Fremlin came to him in November, 1904 ; her mouth was in a very incompetent state for the purpose of mastication, and she was wearing a very common plate, for which she said she had paid ten guineas. He told her that he did not think she would have much future happiness as to dentistry if the ordinary processes were followed. She was anæmic and suffering from neurasthenia. There were five stumps in the upper jaw. These were diseased and loose, and the gums round them were inflamed. One of the molar teeth was the best in the mouth, and by various processes he succeeded in making it a useful member of society. There had been abscesses, the results of which had to be removed before he could begin work. He explained his proposed treatment much more fully than usual to Mrs. Fremlin, because she had had surgical experience in hospitals and was very intelligent. He explained that no other man in

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England did the same work as he did. He also explained that first there must be surgical treatment of the roots, involving, first the killing, so-called, of the nerve by arsenic, then the extraction of the pulp, and the sealing of the canal with a prepared substance of gutta percha, a delicate operation. The roots had to be treated antiseptically. He liked his patients to have the teeth dressed twice a day, otherwise they had to come again and again until the desired result was attained. He then had to fix a logan, or temporary false tooth. The gums had to be lanced all round the root to free them from the tooth. These treatments had to be gone through every time the teeth were fitted, which was very frequently. He kept an appointment book, hall book, day card book (in which what was done to the patient was immediately entered, and was kept jointly by his secretary and himself), a register (containing diagrams of the work done), a ledger, and a book containing the particulars of orders given to working dentists and workmen ; and in these he could show the details of his charges. On November 7th the defendant called with his wife, and he (the witness) explained the state of Mrs. Fremlin's mouth and suggested that she should have teeth fixed on his movable bar system. The advantages of that system were explained to him—namely, that if a tooth broke its renewal did not involve the removal of the whole superstructure. He did not suppose that Mr. Fremlin understood the matter for a minute ; he was a kind-hearted man, had great confidence in him, and trusted the matter entirely to him. He explained it would be a very costly treatment, and would take a long time. Mrs. Fremlin said that frequent visits would fatigue her, and he therefore agreed to give her as long sittings as possible ; but he explained that the visits should be at short intervals, otherwise the case would last for ever. He said it would not last as long as his treatment of Mr. Fremlin's brother, and, in fact, that case had lasted twice as long.

In reply to a question by Mr. Justice Grantham the witness said :—My dear Lord, all I can offer to my patients is my skill ; there are only a certain number of hours in the day, and if the patient occupies any of these hours he must pay for them. Mr. Fremlin, on November 7th, patted him on the back, and said, " Dr. Richardson, I want you to do the best work you can for my wife, that you can conceive ; and please do not tell her the price we have agreed." The

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effect of Mrs. Fremlin's not visiting him at sufficiently short intervals was to increase the length of the treatment, owing to the presence of septic matter.

Mr. Richardson, cross-examined by Mr. Lush, said he had no degree of M.D. His title of doctor had been given him by the Old Wisconsin District College, the oldest in America except that of Maryland. It was not recognised in England. He was a complimentary doctor only. Even without the agreement his charges were fair and reasonable. He had charged as much as £3,000 for putting a mouth in order.

Mr. Lush: Where do you come across these fortunate people?—Every day. I am here not so much for myself as for my profession. I hope this will be a stepping-stone to teach the English people to know the value of their mouths. —It will be a rather expensive one, I am afraid.

Have you ever been to law before?—Yes, I believe once against an idiot woman.

He had brought an action in the Westminster County Court against a Mr. Freeman for stopping his daughter's teeth.

The Witness: How much was the bill?

Mr. Lush: £20.

The Witness: £20? Oh, that is not worth talking about. It is not worthy of you to mention it.

Mr. Lush: Did the Judge say that the charge was exorbitant, and dismiss your action?—I daresay he did; he would not understand the value of my beautiful work.

Did you write to the defendant that there was not a dentist in England able to estimate the value of your work?—Yes.

Not even the President of the British Dental Institution? —No. He, all honour to him, practises at Cardiff, and what on earth can he know of work like mine?

In response to a remark by Mr. Lush, "Please answer the questions, Dr. Richardson," the witness replied, "Mr.," not "Dr."

Did you write that this case had cost you part of your life?—I did, and it did. It cost me my blood and bones.

Do all your cases do this?—Not like this one.

Then the £3,000 cases must have taken a great deal of your blood and bones?—They did.

What happens to you?—What happens when a man

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sweats and fumes?—My anæmic face will tell you that I am a hardworking man.

Mr. Lush proceeded to read notes written by the witness's secretary of a conversation between the witness and Mrs. Fremlin.

Was he hidden behind a screen to hear the conversation between you and your patient?—We have no screens. I did not know that he was so energetic in the matter, and I did not know he was taking notes.

Mr. Lush: Do you say that?—Yes.

Mr. Lush: Mr. Fremlin is rich, kind-hearted, and confiding?—Yes.

Just the sort of patient you like?—No, not like him.

You did certain work on the plate which was in Mrs. Fremlin's mouth when she came to you?—Yes.

You put in one tooth worth a shilling?—Ninepence.

Well, ninepence, and half-a-crown's worth of gold, and did you charge £26 for that, for which any other dentist would have been glad to take two guineas? The witness.—And how much do you put for the brains and skill?

Mr. Lush: Very little. You charged two guineas also for merely putting the plate in the mouth?—Oh, do not talk of "merely." You are merely asking me questions, and are handsomely paid for it.

The witness, taking some time to answer questions, Mr. Lush said, "Do not waste your brains too much, for I have a lot of questions to ask yet."

The witness; You see you have a wig to protect yours, I have not; and have to look after myself.

While the witness was explaining at length the process of removing pulp, Mr. Lush made a gesture of impatience.

The Witness: You can sit down, Mr. Lush, for a minute. It is all very well for you to speak like this of these matters, but if you were in the chair you would be yelling.

You took one and a half years to prepare one tooth, and charged £60 for it. Could any other dentist have done this particular work?—Yes. There was an abscess under that tooth.

Is not the result of your beautiful work that Mrs. Fremlin cannot clean her teeth, and that there is decay in the teeth, which will increase?—She can clean her teeth, and if she cannot, I can.

Yes. She must came to you every time she wants to

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clean her teeth, and you are the only dentist in Europe who understands this?

Mr. Lush: When you do ordinary plate work, do you charge the patient two guineas for every visit made for fitting the model after you have made it?—Yes.

Do you think that is fair to the patient?—Yes, and for this reason. They do not understand dental work in England, and if I did not charge, the patient would call 50 times; but if he knows he must pay for each visit he soon makes the plate fit.

When he comes to ask what your charge will be do you charge two guineas for that?—Yes, just as my lawyer tells me he will charge me 250 guineas and charges me £4 for telling me so.

I put it that your intention from the first was to make Mr. Fremlin pay as much as possible?—No, I am not that sort of dentist.

For aught he knew your bill might have been £3,000?—That is the advantage of charging by time, for then the patient can at any time say, "I have had enough of it," and go away. This rich brewer has taken all these hours of my blood and bones and offers me £100 for them.

Mr. Lush: I was not entitled to tell the jury that; now you have let it out.

A Juryman: Did you tell Mr. Fremlin on March 7th that he owed you £250?

The Witness: No, Mr. Jury, as a business man he ought to have inquired. I am as proud of my work in this case as a mother of her first baby.

Mr. Lush produced a set of teeth, and asked what he would have charged for it.

The Witness: If I had done it in this way—a very stupid way; the man who made it must have been an idiot. I should have charged £100. There is beautiful skill, but it is wrongly applied.

In re-examination by Mr. Palmer, the witness said that in the case mentioned his charge had been £3,336, and the ledger containing it was produced and examined by the learned Judge.

Mr. Justice Grantham: I see that among the items are many charges of three guineas for a bottle of lotion and of half a guinea for tooth paste. The account was spread over 18 years, and the patient was one of the wealthiest men in England.

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The Witness: They were 48 oz. bottles. That patient was a very clean man.

Asked if he considered "Evans on Bridge Work" an authority, he replied that he was a very poor one.

Mr. E. J. Cox, the plaintiff's secretary, said he was present at the conversation between Mr. Fremlin and the plaintiff, when items of account were added up, and in response to the question which kind of bar he would like, the defendant said he wanted the very best done.

Mr. George Cunningham, M.A., Cambridge, L.D.S., R.C.S. (England), D.M.D., Harvard, said he was a lecturer on odontology at Cambridge, and that he practised there and for special cases in London. He knew the plaintiff, his practice was a most high class one. He had never known a case like the present in the whole of his experience in which the work was done in this way. It was unique in that the bar was fixed and yet removable by the dentist. A crown was fixed into the root by a post, a post was fixed in this crown, and to this post the bar was fixed. If this work had been done at short intervals, the time occupied would have been much less; but, as there had been intervals sometimes of more than two months, the roots might shift and thus alter the alignment. That, he thought, had happened in this case. The plaintiff practised in a special way and among a special *clientéle*, and there was no tariff or charges among dentists. This system was entirely new to him, although he was a lecturer on the subject, and he hoped Mr. Richardson would take out a patent for it.

Mr. Lush, for the defendant, said that if the plaintiff had not thought he had got the defendant, this rich and confiding man, bound by a contract, he would never have dared to make this preposterous and exorbitant charge. He would, therefore ask them to say that this contract never was made. Was it not clear that from the beginning he had determined that the movable bar, the more expensive bar, should be adopted? Was the plaintiff's attitude a fair one? Why did he not tell the defendant in March that at that time he had a bill of £250 against him? Would they consider that they had been treated fairly if a dentist had treated them so? The removable bar had since had the misfortune to become a fixed one, and if it had to be removed Mrs. Fremlin would have to go through an unpleasant operation. He submitted that the money already paid was amply sufficient to satisfy the claim.

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Mrs. Fremlin said that she went to the plaintiff because a plate she was wearing was rather loose, and he suggested she should have a removable bar. She had had no abscesses before this for many years, After the work commenced she constantly complained of the long time occupied, and at one time gave up going on that account. He talked a great deal while he worked. She suffered a good deal of pain. She could not now clean the teeth properly, and could not remove the bar herself, as she was told she would be able to do.

Cross-examined by Mr. Palmer, the witness said she had suffered in her health for the last few years. She had been recommended to the plaintiff by former patients, and understood he was a fashionable London dentist. She did not understand dentistry, but had the feeling that the work was very slow. The plaintiff had complained to her that injury had been done by her long absences.

Mr. Walter Thomas Fremlin, the defendant, said he had told the plaintiff to do the best he could, and that the plaintiff said he would do some beautiful work such as no other man in Europe could do, and he understood he was going to put in a removable bar, by which he understood a set of teeth which could easily be taken out. He did not remember his saying that Mrs. Fremlin would have to go to him to have them taken out. He did say at the first interview, on November 7th, 1904, that the work would be expensive. He was only with him a few minutes. After her visits to the plaintiff his wife was in a serious state of exhaustion, and complained of pain in her jaw. On March 7th he was with plaintiff about ten minutes or a quarter of an hour. The plaintiff put before him various figures, and two sorts of bars. He said that he was to do the best he could for his wife. The figures shown him amounted to £150. He did not sign the written authority sent for his signatnre on July 15th by the plaintiff, because he thought that the less correspondence there was the sooner the business would be over. He believed the plaintiff's statement that no one else could do the work, and relied on him as a professional man.

Cross-examined by Mr. Atkin, the defendant said that, if he got value for his money in treating with the plaintiff, money was not of very much consideration. He consulted a first-class dentist and left himself in his hands. On November 7th he knew that the plaintiff's charges were two guineas per half-hour. He could not say whether he would have

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allowed the plaintiff to attend on his wife if he had not stated that no one else could do the work he could do. He understood that the £150 was for the bar and the fixing. He did not remember whether he noticed the words "The above fees are extra to the operative work and work preparatory to the mechanical work" on the list of fees submitted to him."

Mr. Atkin: Do you who know Dr. Richardson, suggest that he tricked you into agreeing to the price for the bar by concealing the fact that the mechanical work was extra? It came as a great surprise to me. When I received the letter of March 4th it looked very much like having to pay extra.

Then how dare you tell the jury that it came as a surprise? I ought to have known, I suppose.

Do you still say he tricked you? I don't see where the trick comes in.

Did you instruct your counsel to say you had been tricked? I said nothing at all about it. I do not suggest any concealment of the number of half-hours occupied: I did not calculate them.

Mr. Justice Grantham as this stage asked Mr. Richardson to illustrate on a model the difference between the fixed and the movable bars, and in reponse to a question by the learned Judge he said: "I see your Lordship is almost a dentist by now, and the question is a very reasonable one to put."

The defendant, in answer to a question by a juryman, said at the beginning he thought the charge would not be as much as £100.

Mr. Lloyd Williams, M.R.C.S., L.R.C.P., L.D.S., lecturer on dentistry at the Royal Dental Hospital, President of the Odontological Society, and Member of the Board of Studies of London University, said there was a recognised difference between surgical and mechanical work. Mechanical work included all that pertained to the bar or plate, and he had never known the time occupied in fixing them in the mouth, or taking the impression, charged as surgical work.

Mr. Atkin submitted that this evidence was inadmissable as the only question was whether there was a contract.

His Lordship overruled the objection.

A model of a set (top and bottom jaw) was produced by the witness, which he said had been made by a student, which had been used for four years, and which he said, was very much like the one supplied by the plaintiff, but with

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this difference, that it was removable by the patient himself and was thus a really removable bar. Mrs. Fremlin could not clean her teeth properly.

Mr. Lush: Does that work take the blood and bones of an operator more than any other work? I never heard of it.

There is a benefit in a removable bar? Yes. I myself abhor the fixed bar. But with a removable bar there was no necessity for sliding teeth. The plaintiff's bar in Mrs. Fremlin's mouth had now become a fixed bar, and a tedious operation would be necessary to remove it. A reasonable remuneration for all the work done would be 76 guineas.

Mr. Lush: Including brains, blood and bone? Yes. The time taken in this case was simply ridiculous. Mrs. Fremlin's palate was not a flat palate, as stated, but rather higher than usual. He had tested the work on each tooth, and the charge for merely preparing one tooth for the bar was £65 12s. 6d. Abscesses ought not to have appeared.

Mr. Atkin said the charge now was negligence, of which no mention was made in the pleadings, and which, therefore, he had no expert evidence to meet.

Mr. Lush said that it was relevant, not as a charge of negligence, but because part of the charge was caused by delay owing to the abscesses. He did not suggest negligence; it might be error of judgment.

His Lordship sustained the objection.

The Witness: Three or four dressings would be sufficient to cure the abscesses. All that could be done was to put an antiseptic on the root to overcome any organisms present, and as long as it remained potent it was unnecessary to remove it. It was rather difficult in some cases to differentiate between surgical and mechanical work in the account rendered. Three guineas would be a proper charge for the work done on the original plate worn by Mrs. Fremlin, for which 20 guineas was charged. There was nothing in the work which a dental student could not do.

Cross-examined by Mr. Atkin, he said he was not a great believer in bridge work in every case.

Mr. Atkin: No doubt; that is why you have been called.

Mr. Justice Grantham: Having regard to the length of time bridge work takes, ought it to be adopted in the case of a lady whose health was not good?—No. I think not.

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Mr. Atkin : If it was necessary to do all that the plaintiff did ?—That is a big "if."

But if it was necessary, you do not suggest that 16 hours would be sufficient?—No, not "if." He would not have done the work in that way.

Mr. Claude Rogers, M.R.C.S., D.M.D. of Harvard, said he had been for 15 years demonstrator and instructor in operative dentistry at the Royal Dental Hospital, and had had great experience of small bridge work. It was quite possible to make a bar removable by the patient ; the bar in Mrs. Fremlin's mouth could not be so removed. Removable bars could be considered with reference to the ability of the patient or the dentist to remove it, and a fixed bar could only be removed by destroying it. If sent out the mechanical work would have cost about £25. When a price was given for a bar he had never heard of the fitting being charged extra. Eighty or 90 guineas would be sufficient for the work done, including the work on the plate, if the bar was removable. There were no cleansing spaces to allow of the proper cleansing of the teeth. The charge of 25 guineas for the plate was preposterous. The plaintiff had come to him to ask him to give evidence, but he had told him that he was on the other side. One guinea for half an hour was the charge of an ordinary West End dentist.

Cross-examined by Mr. Atkin, he said he was not aware one way or the other that the plaintiff had the reputation of being a skilful dentist. He had not come across this particular system in practice. Mrs. Fremlin would know that she could not herself remove the bar from the very commencement ; but it was removable by a dentist. He had based his estimate of the price on what he would have named for it himself. The plaintiff's method would take a few more hours than his method. The state of the teeth, whether sound or not, and the health of the patient, would make some difference.

In re-examination he said that roughening the canal would take thirty seconds. Two guineas were charged for this.

The plaintiff, recalled, denied that the bar had been made for him by a mechanic named Phillips, He could not find any mechanics able to do his work, and had paid £2,000 a year to men who were useless. He had paid £25 to Phillips for some small work in this case, polishing the bar perhaps.

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When the Court had finished laughing he would inform them that he had himself spent days and nights in polishing and finishing the case.

Mr. Lush: Well, we want to finish this case.

Mr. Phillips, whose evidence was objected to by Mr. Atkin, said the work was sent to him by the plaintiff. He supplied all the materials except some 12s. worth. He had done the mechanical work on the bar himself, and was paid £25.

Cross-examined: He cast it from a model. The plaintiff would spend a good deal of time over it himself.

At the conclusion of the evidence counsel on both sides addressed the jury.

Mr. Justice Grantham, in summing up the case to the jury, said it had been stated that he had taken a view of the case unfavourable to the plaintiff's case, and he admitted that when he had seen that £65 was charged for one tooth, and had heard the way the plaintiff gave his evidence, he had taken a strong view. The question was whether there was a contract, and no doubt there was some evidence of a contract. But it would be noticed that the plaintiff was always throughout doing something which seemed unnecessary except to support the charge he was making, and on July 15th, 1905, had enclosed a form for the defendant's signature, although his case now was that the matter had been thoroughly understood from the very beginning by the defendant. What was the necessity for that if the arrangement had already been made? The defendant did not sign that, and therefore the plaintiff was thrown back on the original contract, or, failing that, the value of the work done. Mr. Fremlin did not understand dentistry and all the details of this system; he had gone to one he thought was a good dentist, and told him to do the best he could for his wife. Then it was extraordinary to find the account rendered to Mr. Fremlin interlarded with a large number of observations.

Mr. Atkin: Your Lordship is reading a copy of the ledger, not the account.

Mr. Justice Grantham said it had been handed up to him. Assuming a contract to be for two guineas for every half hour, the question was whether that meant every half hour that the plaintiff could succeed in keeping this poor lady in the chair, or every half hour properly occupied. Were all the half hours properly charged? The plaintiff had suggested

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that the time he had had to devote to Mrs. Fremlin had ruined his practice; but reference to his day-book showed that this was not the case, that on many occasions he had no other patients, and that he could if necessary have devoted twice the time to her. They must, however, start on the assumption that the defendant must pay at the rate of two guineas for every half hour. The question for them was, Did the defendant leave it to the plaintiff to fix the half hours to be paid for, or was payment to be made for time properly taken only? As to the mechanical work, the defendant said he understood that the bar was to be removable by his wife, and though if removable by the dentist it was a removable bar, they might consider that the plaintiff ought to have explained the difference more carefully. However, the defendant had accepted it, and therefore he could not now refuse to pay for it. Then came the question of the price. Considering the letter of March 4th, in which the plaintiff told the defendant that his charge was exclusive for the bar, he thought that the evidence on this point was in favour of plaintiff. The jury ought not to act on their knowledge of the amount paid into Court, but consider the question independently of that.

The jury having retired to consider their verdict, returned into Court at 5.30, after an hour and a quarter's deliberation, with a verdict for the plaintiff for £178 5s., in addition to the £100 paid into Court.

Judgment was entered accordingly, the learned Judge not having left the Courts.—*The Times.*

# Obituary.

## MR. J. E. MADDEN.

THE interment took place, on March 20th, of a prominent figure in East Lancashire dental circles in the person of Mr. John Edward Maden, L.D.S., son of Councillor W. H. Maden, L.D S., of Rocklea, Manchester Road, Accrington, who succumbed the previous Wednesday, at Rocklea, to an attack of Bright's disease and heart failure. He had been in poor health for some weeks, but had only been confined to bed for a few days. Mr.

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Maden, who was a genial young man, only 28 years of age, had many friends who deeply regret his loss, and much sympathy is felt with his relatives. He leaves a widow and two children. Born at Rawtenstall and educated at Newchurch Grammar School, and Victoria University, Manchester, Mr. Maden took his degree at the Royal College of Surgeons of England, about five years ago, and was with his father as a dental surgeon. He was fond of cricket, played football and many other manly sports, and was a member of the Wednesday Cricket Club, and was an accomplished pianist. Local dentists paid a last tribute to the deceased at the funeral and there were upwards of fifty wreathes and floral tokens.

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No. 967. LONDON, MAY 1, 1908. VOL. LI.

# SOME NOTES ON THE GROWTH OF THE JAWS.*

By James T. Carter, L.D.S.

(*Continued from page* 342).

In a very interesting paper on "The Expansion of the Maxillary Sinus," Dr. Arthur Keith has shown that the growth of the maxilla and the development of the antrum are closely related, and that the growth and changes in the lower jaw are correlated with, but secondary to this development. He has also pointed out that all the permanent molar teeth are developed in the posterior border of the jaw in front of the pterygo-maxillary fissure and that owing to the expansion of the antrum this posterior border is carried downwards and forwards until it becomes the alveolar border. The effects of this growth are best seen in the gorilla where the expansion of the sinus is enormous. "That part of the jaw which carries the milk teeth and which at birth lies beneath the floor of the orbit is thrust downwards and forwards until it lies entirely in front of the orbit.

*Transactions of the Royal Society of Medicine, Odontological Section.



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Along with this growth downwards and forwards of the premaxillary part of the jaw, there is also a rotatory movement in the molar-carrying part of the maxilla, whereby the posterior border of the jaw moves downwards, its lowest portion becoming the alveolar margin. This rotation is best seen in the orang, in which the three molar teeth are permanently implanted on a segment of the circle in which the rotation takes place. The growth of the upper jaw in each direction is most rapid during the eruption of the permanent teeth. The alveolus occupies practically the whole depth of the posterior margin of the jaw at birth, in man and ape alike. While the posterior border of the jaw quadruples its extent from birth to maturity, the facial border becomes little more than double, and the alveolar margin increases in even smaller degree. Growth adds to the depth of the posterior part of the jaw much more than to any other dimension, and this addition is entirely due to the growth of the maxillary sinus." The fulcrum on which this rotation takes place is formed by the body of the sphenoid, the anterior surface of its great wing and the pterygoid plates and mainly by the internal pterygoid plate. Fawcett has shown that whilst the external plate is ossified entirely in membrane the internal plate is ossified in cartilage and that ossification begins here much earlier than has been supposed, having started on the 19 mm. fœtus. The cartilaginous origin of the internal pterygoid plate is very suggestive. Of course the maxilla does not come into actual contact with the sphenoid, the palate bone acting as a wedge between. It is interesting to note that ossification starts in the vertical plate of the palate bone immediately internal to the palatine nerves, about 19 mm., and the palatine process appears in the 24 mm. embryo. The dependence of the pterygoid plates on the development of the maxilla was pointed out by Sir John Tomes who showed that these in-

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creased between the ages of seven and twenty-one years by one-third of their ultimate length.

In the chimpanzee there is a great increase in the size of the intermaxillary bone between infancy and adult life as was pointed out by Mr. Charles S. Tomes. Whilst sectionising a number of skulls of apes I happened to bisect the skull of an adult chimpanzee and found a condition which I do not think has been described hitherto, *i.e.*, the existence of an intermaxillary antrum formed by a prolongation or off-shoot of the maxillary antrum. So far as I can see this starts on the antero-internal wall at some distance above the level of the floor, from thence it passes inwards into the palatal process of the superior maxilla, and then behind the enormous socket of the canine into the intermaxillary bone, its growth progressing until a deep depression is formed immediately behind the sockets of the two incisors. Another off-shoot starts high up on the anterior surface and passes over the top of the canine socket to join the cavity in the intermaxillary bone ; this probably has some connection with the full eruption of the canine, for in specimens where the eruption of the tooth is not complete the junction of the two cavities has not quite taken place.

In certain monkeys and apes, sometimes in man, the maxillary sinus is comparatively feebly developed, and in these cases there is a great development of the inferior meatus of the nose, which brings about a result similar to the expansion of the antrum. In certain skulls of gorilla which I have there is no prolongation of the antrum into the premaxilla, but this is compensated for by a deep depression from the inferior meatus lying immediately behind the sockets of the incisor teeth.

With the inflection of the spheno-ethmoidal angle and consequent reduction of the forward projection of the maxilla there has been a shortening of the hard palate antero-

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posteriorly. This reduction of the bone is out of proportion to the reduction in size of the alveolar arch, for the teeth and alveolus involute more slowly. To meet this reduction the teeth assume an arch of a different shape, and the palatine processes of the superior maxilla are greatly reduced. In white races the horizontal plates of the palate bones form a much larger proportion of the hard palate than in the case of negroid races, and this disparity seems to be still greater in the Australasian races. In anthropoid apes the transverse palatine suture is often in a line with the posterior borders of the wisdom teeth, and forms a very small part of the hard palate. Knowing as we do that the teeth are the organs which undergo least change in the phylogeny of the race, and that the alveolar arches are dependent for their existence on the teeth, this points to the fact that the changes in the maxilla are most marked in those parts which have no direct association with the teeth. I shall return to this subject again in dealing with the lower jaw.

The growth of the mandible is determined to a large extent by the growth of the upper jaw. At birth its upper border is almost on a level with the condyle. With the growth of the maxilla, consequent on expansion of the antrum, the mandible gradually assumes its adult shape, the angle being the last portion to appear. The width of the ascending ramus is largely dependent on the length of the mandible, and this again is correlated with the cephalic length, but with this exception the growth and shape of the jaw seems to be largely independent of that of the calvaria.

Professor Arthur Thompson has investigated influence of jaw growth on cranial form, and proves that there is a distinct correlation between head length and mandibular length; also that the longer jaws have, as a rule, the higher coronoid indices, *i.e.*, that in the case of a mandible with a high index the force is applied at a point further removed from the ful-

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crum than in a mandible with a low index; his mandibular index being

$$\frac{\text{Condyle-symphysial length} \times 100}{\text{Inter-condylic width}}$$

His investigations also show that dolichocephals are, as a rule, furnished with much more powerful temporal muscles than are brachycephals; also that the shorter mandibles of the brachycephals required a lesser force to produce the same result as compared with that which necessitated the greater force on the longer jaws. Taking the condyle as a fulcrum, the greater distance at which the force is applied the less the amount of muscular effort necessary; in other words, the broader the ascending ramus in proportion to the total length of the mandible, the less the effort needed.

There is another point in connection with the growth of the mandible which I think should be emphasised, and that is, that the teeth and tooth-bearing parts change least in the phylogeny of a race, whilst those parts of the bone to which the muscles are attached undergo the greatest change. With the progress of civilisation there has been a considerable reduction of the mandible quite out of proportion to the reduction in the size of the teeth. Allowing for variation in length of the jaw, owing to the correlation between head-length and jaw-length, I have found the greatest variation in the width of the ascending ramus. We find that the alveolar border is larger in proportion to the rest of the mandible in women than in men, and in civilised than in lower classes.

In negroes and in Australian aboriginals there is generally a well marked space between the posterior border of the third molar and the anterior surface of the ascending ramus. Pelletier has measured this by means of Broca's stereograph in a large number of cases, and found that this averages as much as 4 mm.

In Europeans, however, she found that the ascending

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ramus overlaps the wisdom tooth by as much as 4 mm. From this fact she drew the conclusion that there is an unequal rate of growth of different parts of the jaw. Knowing as we do that the mandible is formed as a single skeletal element, which grows in length by deposition of bone on the posterior border of the ascending ramus and absorption from the anterior surface, we see that it is a case of arrested development.

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THE ACTION OF PREPARATIONS OF IRON UPON THE TEETH.—In a recent number of the *Therapeutische Monatshefte* Dr. Morgenstern describes the results of a series of experiments, extending over a period of from two to four months, on the action of various medicinal preparations of iron upon the teeth. Thin sections of the teeth of man, the ox, and the calf were immersed in solutions of various salts of iron and ferruginous waters and examined microscopically at regular intervals. The results show that reduced iron, saccharated solution of iron, and solution of albuminate of iron exert no deleterious effects whatever and in this respect stand in a class by themselves. The citrate of iron has a slight action, while the sulphate, lactate, and pyrophosphate of iron induce a partial decalcification and a pronounced blackening of the teeth, Ferrous iodide and ferrous chloride are the most injurious preparations of iron, 10 per cent. solutions of these salts removing the enamel in a few days. As regards ferruginous mineral waters the injurious action on the teeth is due not merely to the proportion of iron present but more particularly to the presence of earthy salts which tend to increase the corrosive action of iron. When iron is administered it reappears in the form of an albuminate which is incapable of harming the teeth. Dr. Morgenstern's results serve to emphasise the necessity of advising patients to take most preparations of iron through a glass tube.—*The Lancet.*

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# ETHYL ALCOHOL.

By B. Bennette, L.D.S.Edin.

Ethyl Alcohol is the most important body in the di-carbon or ethyl series, it contains the radical ethyl $C_2H_5$; formula $C_2H_5OH$, that is to say it is ethyl hydroxide. It may be prepared from its elements by synthesis in the following manner :—

Acetylene is prepared by bringing two carbon terminals together in an atmosphere of hydrogen and passing a powerful electrical current through. Carbon and hydrogen directly unite at the high temperature produced and acetylene is formed $C_2H_2$. By direct combination with hydrogen ethylene is formed $C_2H_4$, which when treated with concentrated sulphuric acid yields hydrogen ethyl sulphate, on adding water and boiling, sulphuric acid and alcohol are produced.

On a large scale alcohol is prepared by the vinous fermentation of sugar obtained from various sources. The decomposition takes place in aquous solution by means of yeast ; alcohol and carbon dioxide are chiefly formed, along with some glycerine and succinic acid, and traces of fatty matter and cellulose arising from the growth of the yeast.

When fermentation is completed the liquid is distilled and redistilled to free it from water. The greatest degree of concentration which can be obtained by repeated distillations is a liquid containing 10 per cent. of water. In order to free the alcohol from every trace of water, it is finally distilled with quicklime, the product constituting absolute alcohol.

Absolute alcohol is a pure, colourless, mobile liquid with a somewhat burning taste and spirituous smell. Specific gravity 0° is 0.80625, boiling point 78.4° at normal barometric pressure. It can be solidified on exposure to a very low tem-

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perature. It is inflammable, burning with a faint luminosity, water and carbon dioxide being formed. It is very hygroscopic, and is miscible with water in all proportions, the mixture contracting in volume and evolving heat.

Alcohol is a great solvent of many salts and gases. It also dissolves resins, oils and organic substances, which are insoluble in water.

Potassium and Sodium rapidly decompose alcohol with the formation of an ethylate of the base. The ethylate of sodium is used as an escharotic for the removal of small growths, its application is as a rule attended with a considerable amount of pain.

Subjected to the action of a weak oxidising agent alcohol is converted into aldehyde, a strong oxidising agent converting it into acetic acid.

To test for the presence of alcohol, add solution of iodine to the liquid to be examined, then add potassium hydroxide till the colour is destroyed, a yellow precipitate forms in a short time, indicating the presence of alcohol ; this precipitate is iodoform. The presence of water in alcohol may be detected by moistening anhydrous copper sulphate with the suspected liquid. If any water be present the white anhydrous powder becomes blue.

*Therapeutics.* Alcohol is employed in dental practice for a variety of purposes. It should always be at hand in the form of brandy, for use in emergencies, particularly when anæsthetics, general or local, are being used. It is a distinct disinfectant in an 80 per cent. acid solution. It is principally employed for its dehydrating properties, as in the drying out of cavities and root canals. A saturated solution of menthol in absolute alcohol placed in a sensitive cavity and left for a few minutes and followed by the application of warm air, forms an efficient obtundent in most cases. The analgesia is produced partly through the abstraction of water from the

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dentinal tubules, and partly through the cold produced by evaporation of both the alcohol and menthol as well as by the direct obtunding property of the latter substance. When it is thought advisable to leave a layer of softened dentine over the pulp, rather than sacrifice that organ, a very good way is to flood the cavity with absolute alcohol, slightly warmed to prevent shock as much as possible, and leave this for a full five minutes; remove the alcohol and flood the cavity with pure oil of cloves also leaving this for a full five minutes. Oil of cloves will penetrate a considerable distance into dentine which has been first treated with alcohol. This process is based upon the cleaning of sections for the microscope and was first advocated to the best of the writer's knowledge by Dr. Leon Williams. It is used to a great extent for mixing with porcelain bodies, opinions differing on the relative advantages of alcohol and water for this purpose.

Alcohol is a neutraliser of the action of carbolic acid; in cases where this agent has been used and it is desirable to stop its action, the application of alcohol is sufficient.

Most antiseptics and germicides are rendered less efficient when dissolved in alcohol, one important exception is perchloride of mercury, the action of which is intensified when alcohol is the vehicle. There is no better way of treating the roots of molars previous to filling than to flood them with an alcoholic solution of this salt, swab out with cotton and dry with hot air. A root canal so treated just previous to filling stands a very good chance indeed of remaining sterile permanently. It is a good plan to make an invariable rule before commencing the treatment of a tooth, after applying the rubber dam to wipe all the surfaces of the tooth with alcohol and then dry with warm air. By doing this imperfections are brought to sight which might otherwise be overlooked.

Alcohol may be incorporated with mouth washes for

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occasional use in cases of passive inflammation of the oral epithelium and for " rubber sore mouth."

Steel instruments, such as hypodermic needles cannot be kept in alcohol. The following extract is taken from *Items of Interest* for 1901, page 948 : "The action of alcohol on metals is peculiar. Dr. Malmejac in his experiments used 95 per cent. alcohol which left no residue on evaporation. The metals, copper, iron, tin, lead, zinc and galvanised iron, were corked up with alcohol in glass flasks and kept at ordinary temperatures for six months. The copper was entirely unacted upon, but in all the other flasks there was a deposit on the bottom and the metal was covered with a similar deposit. In the case of tin, lead, zinc and galvanised iron the deposit was white ; that from iron was red, resembling rust. All of the liquids, except that in which the lead had been placed, filtered clear ; the latter retained a milky appearance after repeated fillterings through double filters. The clear filtrates from iron, lead, zinc and galvanised iron gave much residue on evaporation, while the residue from tin was hardly appreciable. In the former cases it is clear that not only had the metal been oxidised, but a considerable quantity had entered into the solution." Experiments are being conducted with a view to determining the action of pure alcohol (not 95 per cent strength, as water may have been responsible for the oxidation at least of the metals), on various metals, the result of which will be published in due course. An excellent way of keeping hypodermic needles is to place them in glycerine in which they remain bright and clean. Alcohol may be used as a refrigerant, the sense of cold being produced by the abstraction of heat from the part to which it is applied, by reason of its rapid evaporation. It is useful in cases of neuralgia, a pieee of lint moistened with diluted alcohol and kept in contact with the painful area often bringing relief.

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A long continued application produces a rubifacient effect; it is absorbed by the unbroken skin.

To return for a moment to the use of alcohol as a vehicle for porcelain bodies. The advantage gained by the rapidity of its evaporation and consequent lessening of the time taken in fusing, is more than counterbalanced by the fact that the resulting inlay is not so dense, as is the case of the inlay in which the body has been mixed with water. More body can be incorporated with water on account of the slowness of its evaporation. Take a given quantity of any mineral body and mix with alcohol, in a moment or two the alcohol has evaporated leaving the powder dry. Take the same quantity of body and mix with the same amount of water instead of alcohol, in a moment or two the body has settled considerably in the matrix, leaving a layer of water above it. This is absorbed and more applied in the same way. In other words, more body can be placed in the matrix when water is used than can be done with alcohol. In the case of alcohol the particles are perched upon one another much more closely. It goes without saying that only distilled water should be used.

There are many other uses for alcohol, such as its general effects on metabolism, its remote local effects, its use as a food, and as a constituent of anæsthetic mixtures, which cannot be discussed in a paper of this sort.

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British Journal of Dental Science.

LONDON, MAY 1, 1908.

# A NEW SOCIETY OF UNREGISTERED MEN.

THERE is an ancient proverb to the effect that, "where the carcase lies there will the vultures be gathered together." When it was discovered what an apparently dead thing the Dentists' Act was supposed to be, there was a rush to take advantage of it. The first means of circumventing the Act was by taking advantage of the Limited Liability Companies' Act and of the ruling that a "person" did not mean a "Company." The result of this judicial decision—in our opinion a most inequitable and illogical one—was that many Companies were started, until the Law one fine day discovered that it was illegal to utilise a provision of one Act to circumvent the provisions of another. But meanwhile some other enterprising spirits discovered that there was seemingly no necessity to go to the trouble and expense of forming a Limited Liability Company, when the only thing that must be observed was to omit using the titles reserved by statute for the legally registered practioner. After this discovery the vultures gathered more quickly than before and formed themselves into a Society called "The Incorporated Society of Extractors and Adaptors of Teeth." This Society boasts a large membership roll and vested capital. The latest news is that another flock of these birds of evil omen is about to make its appearance under the name of "The Amalgamated Society of Dental Operators and Mechanics."

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We beg to warn these latter gentry that the inclusion of the word "Dental" in their title is fraught with danger, if used by any of their members who intend to practise dentistry. But apart from this it will be seen that in the recent case touched upon in our last issue, the very fact of holding one's self out as practising "painless extractions" without being on the Register, has been held to be illegal, as coming within the clause of the Act which forbids any such to hold themselves out as "specially qualified."

It is not only in Dental Surgery that this latter ruling has been given, but also in Veterinary Surgery. Some time ago the Justices of Kingston-on-Thames refused to convict a man not on the Veterinary Register for calling himself "Canine Specialist." The decision was appealed against and the Lord Chief Justice and Justices Ridley and Darling in a Divisional Court allowed the appeal. Surely the law for the protection of dogs and horses from unregistered practitioners ought not to be more strict than that for human beings!

It may cost us a good deal as a profession to fight these onslaughts on our dearly-won position, but we deserve to lose it if we hesitate to support those who are fighting our battle. The registered man must set his house in order and be prepared to do all that in him lies to fight for what we consider justice to himself and protection to the public.

## RICHARDSON v. FREMLIN.

MANY members of the profession have been surprised that the plaintiff was awarded so large a sum as £278 5s. although that was only the half of the enormous fee he demanded. A contract in the eyes of the Law is a solemn thing, and if Mr. Fremlin was so foolish as to enter into such a one he has only his confiding nature to blame.

The following letter from one of the jury, which appears in the *Westminster Gazette*, throws some light on the matter.

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The letter reads :—"As one of the jury I have just noticed, with some interest, your comment upon the amount awarded.

"The secret of this case is that there was actually a contract which entitled the plaintiff to make this extraordinary charge of £570.

"Whether the defendant showed wisdom in allowing himself to be gradually led into this contract, and whether the plaintiff will ultimately profit by the explanation of his system, is another question altogether, and may, I think, be safely left to the litigants.

"The question for the jury was extremely simple : Was there a contract, and, if so, was it properly executed ? We decided that there was a contract, but that it had not been executed exactly according to promise.

"We had, therefore, as advised by the judge, a case for reduction ; and, acting upon a system, and with the contract in view, we unanimously decided that £278 5s. was reasonable.

"Your readers may go to their dentists with the same confidence in the future as they have done in the past, in spite of our decision, but only so long as they are not so foolish as to agree to pay £2 2s. for every half-hour in the operating chair, exclusive of an arranged price for the teeth when actually supplied."

PHOTOGRAPHS AS ADVERTISEMENTS.—*The Pelican* says : "Pretty teeth are a great charm we all know, but the possession of them becomes at times just a little bit of a nuisance. So thinks Miss Marie Studholme, anyhow, for she has found herself involved in three actions, which she was compelled to bring against dentists for using her photographs as advertisements of their false teeth. For some reason or other an impression has got about that the fair Marie's teeth are her own by purchase, and naturally the charming little lady is very indignant thereat, for, as she says, 'my teeth were given me by Mother Nature, bless her ! and not purchased from Mr. Dentist—bless him ! ! '"

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False Teeth Pay for Dinner.—An amusing incident occurred at a restaurant in the Rue Montmartre, Paris, recently. After an excellent dinner, a provincial visitor discovered that his pocket book had disappeared and that he was unable to pay the bill. He explained his position to the proprietor, but the latter, who was recently swindled by an individual who told the same story, refused to take any excuse for non-payment. In order to avoid a scandal, the visitor was obliged to leave his gold mounted artificial teeth as a guarantee that he would return and pay for his meal.

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Genius and the Last Born.—Contrary to the generally accepted dictum that geniuses have been the first born of their parents, the *Medical Times* of December, 1907, gives the following: "Coleridge, the last of thirteen children; Cooper the eleventh of twelve; Washington Irving the last of eleven; Balzac the last of three; George Eliot the last of four; Napoleon the eighth and probably the last of his family; Daniel Webster the last of seven; Franklin the last of seventeen and the last-born of the last born of several generations; Rembrandt the last of six; Rubens of seven; Landseer was the fifth of seven; Von Weber the ninth; Wagner the last of seven, as also Mozart; Schumann the last of five and Schubert the thirteenth of fourteen.

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Recruits Saved by Dentists.—From the annual report on the army, it appears that the recruits who joined the regular army (excluding re-enlisted men and those for colonial corps) in the year ended September 30th numbered 34,916, and militia 28,575. The former total showed a decrease of 1,494 as compared with the previous twelve months, The experiment of sending recruits to local dentists for treatment has proved so satisfactory that it has been decided to extend the system, and funds have been specially provided. A considerable percentage of recruits who would otherwise have been lost to the service have been enabled to enlist in consequence of treatment.

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ALKATHYMOL.—The beneficial effects of alkaline sprays and washes for the mucous membrane of the throat, nose, and mouth are well known. Alkathymol, prepared by Parke, Davis & Company, contains, in addition to Sodium Salts, Thymol, Menthol and Eucaliptol in fixed quantities, so that a reliable solution can be easily prepared. We have found it a useful and pleasant mixture. The same firm are also responsible for "Eudrenine" which contains one per cent. of Eucaine for local anæsthesia, and it is said that this can be boiled without detriment to its analgesic power.

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THE CHILDREN MUST SUFFER.—At Barnsley the School Management Committee had recommended that no action be taken in regard to a suggestion by the British Dental Association that a qualified dentist should be appointed to examine the children's teeth.—The Chairman said they considered at present they had sufficient doctors on their hands. —Dr. Shine urged the condition of the teeth was really the most important of all.—The Chairman pointed out the medical inspectors had to attend to the question of the teeth, and the suggestion was not entertained.

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# Abstracts of British & Foreign Journals.

## ANATOMICAL OCCLUSION OF ARTIFICAL TEETH.*

HARVARD UNIVERSITY

By Dr. W. D. James, Tracy, Minnesota.

It is indeed a pleasure for me to be here to-day, and to meet with the members of this society. It has been my good pleasure, from time to time, to meet several dentists from Nebraska, and while attending this meeting I have been impressed with the fact as never before that the men from this State are truly up in line with the rapid advancement of dentistry.

Before taking up the subject of occlusion of artificial teeth, I wish to say a few words on what we see and hear as we listen.

### The Ideal in Dentistry.

I hear a great many dentists these days talking about ideal dentistry. Now, I want to ask one question: Does the ideal cover the whole or a part of dentistry?

There is nothing in the world equal to the power of an ideal. A man cannot hope to rise above the merest mediocrity unless he has an ideal planted firmly in his mind, and he cannot hope to attain to anything like his ideal without constant and untiring efforts. Moreover, just as a stream cannot rise above its source, it is physically impossible for a person to rise higher than his ideals. Now, from all I hear and see on this subject, I am lead to believe that the ideal dentistry of to-day does not comprehend the whole. Each dentist seems to have his ideal along some particular branch, and oftentimes forgets the ninety and nine that are becoming lost.

Since I have been studying this subject, I have often asked the question. What is the standard of mechanical as compared to operative dentistry? As yet I have failed to find any one who considered it as high.

Now, I believe many reasons may be given for this. Operative dentistry seems to present a more attractive field for the profession, particularly to the recent graduate. It pre-

* Read before the Nebraska State Dental Society, May, 1907.



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sents a greater variety of operations, and certainly more definite results. It seems to be more high-toned, and many seem to think a higher order of talent is required in operative dentistry than in prosthetics.

### Vulcanite Has Helped to Depreciate the Standard of Prosthetic Dentistry.

This I will never admit, and will try to justify my position later on. It will be admitted by all that vulcanite has been the one cause more than anything else that has depreciated the standard of prosthetic dentistry. The ease with which a vulcanite plate can be constructed and the cheapness of the production has undoubtedly presented an attractive field for incompetent persons to enter in times past, who have come into competition with more skilled and painstaking dentists, so that they have been compelled to turn to the operative field and let the prosthetic work go. It is not an uncommon sight to see women who wear their silks and sealskins wearing a poorly-fitting rubber plate, the teeth selected with apparently no thought of artistic taste. Cases like these certainly must make a dentist whose ideals are high turn to operative dentistry with a feeling of satisfaction that in this branch he can find a more appreciative field for operation.

It does not take long for a person of moderate ability and skill to construct a rubber plate that will work after a fashion, and I believe the dental parlours, and also the dental colleges, have pushed the class of work on the public until there is hardly anything but vulcanite demanded, and without doubt many teeth have been sacrificed on account of the cheapness that otherwise could, and would, have been saved.

Now, the point I wish to make is this: That in consideration of the fact that the necessity for artificial dentures will exist to the end of time, in spite of fillings, crowns and bridgework, why not, then, be able to turn to the prosthetic branch and supply the patient with a substitute that will make them look like themselves.

There are comparatively few dentists who possess the artistic ability to become experts in prosthetic dentistry. Surely, then, dental prosthetics should occupy as high a plane as the operative.

Most dentists consider the making of a set of teeth as purely mechanical, while, to my mind, it requires a finer

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eye, a finer artistic sense and as much mechanical ability to properly select and adapt a set of teeth to some patients who call for our services as to make a good filling. This expresses my idea perfectly, and refutes the idea that operative dentistry requires the greater ability, as I have referred to previously in this paper.

MORE ARTISTIC RESULTS IN PROSTHETIC DENTISTRY.

Now, then, let us lift dental prosthetics out of the mire into which it has fallen; let us study more diligently the requirements of each case we have, and study to produce more artistic results. Even with the limitations of the vulcanite plate, very excellent results can be produced by care in the selection of the teeth and the arrangement of the same. What looks worse than a small white tooth, be it ever so even, and worse on the upper jaw of a patient with dark complexion and a large jaw and wide face, and dark, yellow natural teeth in the lower jaw?

Gentlemen, I have seen this very thing many times and what is worse still, many of them have come from dentists who make beautiful fillings. Is it any wonder, then, that dental prosthetics fall into disrepute when this kind of work is being turned out by those we look to for better things? There is, and always will be, a demand for artificial dentures; so I say we should meet the situation and put our thoughts, courage and skill into this kind of work, and I am sure if the results are pleasing the case will give us as much satisfaction as any other dental operation. Again, I hold that every dentist, especially those located in the smaller cities, should put forth every effort to perfect himself along this line of work, as it will broaden and deepen his foundation principles, and if he can succeed in dental prosthesis he certainly will succeed in the operative, and the production of a fine, artistic, good-fitting denture does more than anything else to inspire the confidence of a patient, more than almost any other dental operation.

Dental prosthesis, properly speaking, should include crown and bridge-work, but the intent of this paper is to more particularly treat of plate-work. I do not care to say anything of crown and bridge-work, except this: If the character of a great deal of the crown and bridge work of to-day is not changed for the better, and that very soon, the men who are doing some of it will see their finish almost before they know it.

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Dentistry of to-day is not the dentistry of our fathers. By the word fathers I mean those noble men of our profession who laid the foundation upon which we to-day are building. "All reverence to their immortal names."

In all the liberal arts and sciences there are great masters. Music hath its Beethoven, Wagner, Liszt, and others; sculpture its Canova, Michael Angelo; art its Correggio, Raphael, Landseer; literature its Shakespeare and Dante; law has its Blackstone, Kent, Cooley; medicine its Pasteur, Sayer, Koch, Gray, and others; dentistry has its Harris, Wells, Allen, Miller, Webb, but greater than all these, we have the immortal Black and Bonwill; and last, but not least, our own mighty Dr. E. K. Wedelstaedt. These men are all mastors, and all those who are striving to follow in their footsteps are but apprentices.

To-day, gentlemen, I invite your attention to but one, the lamented Dr. W. G. A. Bonwill, who did more for prosthetic dentistry than any other man. It was he who first gave to us the idea of anatomical occlusion of artificial teeth, and perfected an instrument with which we are able to duplicate all the movements of the human jaw.

In 1895, Dr. Bonwill made a journey to St. Paul to demonstrate before our Minnesota State Dental Association. It was there that I received my first impression of what anatomical occlusion of artificial teeth meant. I at once became very much interested, and at the close of the session several of us were invited to spend the evening at his rooms, where he showed us many different skulls, and so thoroughly demonstrated the correctness of his theories and teachings that I have never since made teeth on any other principle.

In coming to you at this time I wish to say, I come not as a teacher or one having authority, but rather as a humble disciple of my master; and if what I can say or do while with you is the means of helping any of you I shall feel that the time has not been lost.

### Anatomical Occlusion of Artificial Teeth.

In consideration of the subject proper, "Anatomical Occlusion of Artificial Teeth," I wish to make a statement in order that I may not be understood. As I said in the beginning of this paper, Dr. Bonwill has done more for prosthetic dentistry than any other man, and I believe most

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thoroughly in his theories and principles; but I do not exactly agree with him in all the details of his work. The points wherein we differ I will not take up in this paper, but will try to demonstrate them in my clinic in order that I may make them more clear.

Assuming that all steps up to occlusion have been taken, we will proceed with that. Before we can comprehend what constitutes true occlusion, we must know the anatomy of the human jaw and its function. I am fully convinced that the only way to learn anything about correct occlusion of the teeth is to make models of different mouths and study closely their general characteristics, also the abnormal conditions which present themselves. It is my practice before making operations of any kind to thoroughly examine the occlusion in all the various movements of the jaw. In doing this I have received many valuable lessons.

To Dr. Bonwill we are indebted for an articulator which more nearly approximates the human jaw in all its movements than any other that has ever been produced. This fact I have proven to my own satisfaction, and you can do the same if you will search for the truth. It needs no argument on my part to convince you that an artificial set of teeth should correspond with the natural ones in every respect. Then let us take nature for our guide and see how nearly we can duplicate her works.

A study of the anatomy proves one thing, and that is, it is just the same distance from the centre of one condyle to the centre of the other as it is from the condyles to the point where two central incisors meet at the cutting edge, which forms a triangle of four inches, seldom varying more than a fourth of an inch.

Now, if we observe these points we will notice that law and order is the rule, and that the jaw, in forming this triangle brings into contact the greatest amount of grinding surface of the bicuspids and molars, and at the same time allows the incisors all to come into action during the lateral movements of the jaw. You will also notice, in observing this rule, that from the cuspids the bicuspids and molars run in nearly a straight line instead of a curved one back toward the condyloid process.

In the normal jaw there should be an over-bite and also a corresponding under-bite, without which the incisors would lose largely their functions, that of incising food. Where

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the incisors strike directly upon each other the power to cut off food is very much lessened.

Where there is an over-bite and under-bite, just in proportion to their depth will be the length of the cusps in the bicuspids and molars. The curvature at the ramus must be made to conform to the depth of the over-bite, so that when the lower jaw is thrown to the right or left the buccal cusps of both upper and lower sets on that side come together at the same time. The curvature should be great enough to allow the lower second molar on the opposite side to move forward and meet the first molar in the upper. This also balances the plates during mastication and equalizes the action of the muscles on both sides of the mouth at the same time. It may be a question with some whether, by this method of grinding and assembling the teeth, we can imitate the natural movements and expressions. I want to ask one question: Has there ever before been any definite rule or plan where we could regulate our beginning and ending in making a set of teeth? If there has been, I have never heard of it. It has been my observation that artificial teeth—I care not from whose hands they come—are seldom made after any definite rule. I will admit that there are many sets of teeth that do fairly good service, and there are many that look well, and the occlusion is good as far as the up and down movements are concerned, but when it comes to the lateral movements of the jaw they fail utterly. The regular horse-shoe shape, which we see so often, will not admit of the lateral movements, and at the same time bring the bicuspids and molars into a position where they will bear an equal amount of stress, and consequently is the cause of teeth breaking off and the double somersaults, excursions which teeth sometimes take. It may not be out of place at this time to give you a few simple rules, which if followed, will be of service to you in following out this line of work. It is not necessary for me to say that perfect models and a perfect bite are necessary. After obtaining a perfect bite, mark the median line on both upper and lower models; then with the dividers, mark the length of the bite. This will prevent any possibility of shortening or lengthening the bite in the arrangement of the teeth. In mounting the models in the articulator always place the lower so the median line is about four inches from the condyles of the articulator, and the wax or teeth line will stand about one-half inch from the floor of the articulator. Then place

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the upper model in position, and you are ready for the grinding and placing of the teeth. The first step is to grind the bicuspids and molars so as to form an ogee surface. The great advantage in this method is: We have presented at the occlusal line a broad surface contact instead of point contacts, as in the original teeth as we get them from the manufacturers.

In grinding up a full upper and lower the process is practically the same, only the position of the surfaces is reversed. In the upper the buccal cusp should be at a sharp angle, while the lingual cusp shoeld be somewhat rounded. The lower is just the opposite—lingual, sharp and buccal rounded.

In setting up a full upper and lower the six anterior teeth should be placed first, always taking into consideration the general characteristics of the features of the patient. The eye will soon tell one how much of an over-bite will be necessary to restore the natural expression. After this has been done, then commence with the bicuspids and molars on each side, first observing the necessary curvature at the ramus, which must always be as great as the over-bite. The lingual cusps of the upper should always strike between the lingual and buccal cusps of the lower when in repose. But when the lower is thrown to the right or left, the teeth upon that side should strike upon their cusps, while upon the opposite side the lingual cusp of the molars should strike upon buccal of the lowers. This will, as I have previously stated, equalize the action of the muscles on both sides of the jaw at the same time.

Gentlemen, in this brief paper I have tried to show to you that certain results can be obtained by following certain laws based upon the anatomy of the human jaw, and if by chance I have called attention to prosthetics in a way that will tend to elevate it to the standard of any other branch of dentistry, I shall be glad if it is only a beginning.—*Dental Summary.*

## OVARIAN TERATOMATA.

Mr. S. G. Shattock, F.R.C.S., in his Erasmus Wilson Lecture demonstrated a series of ovarian teratomata, showing the progressive disappearance of limbs from an amorphous trunk, the true nature of which latter appeared from the pre-

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sence of a rudimentary intestine, or (as he had demonstrated in three cases) from the presence of a central nervous system. He continued :—

The presence of teeth necessarily shows the teratomatous character of the cyst in which they occur ; but in the case of other ovarian teratomata, even those of a well-pronounced kind, teeth are wanting. These differences we must attribute to differences in the developmental arrest which involves now one part and now another of the embryoma. There are acormous (or trunkless) and cephalous (or headless) embryomata, as there are trunkless and headless acardiac homolgous twins. In regard to the displacement or lateral dislocation of dentigerous and other bone, and the utter absence in most cases of any structure morphologically like a cranium, one must not overlook the mechanical action of the enlarging cyst and the pressure of its contents in exaggerating what are, probably, also original defects of formation. The striking length of the hair in certain ovarian cysts, again, can hardly be explained, except by regarding such hair as growing from a cutaneous area answering to the scalp, and this view is strengthened when the hair arises in the neighbourhood of a dentigerous process of bone. The hair in one College specimen (Mr. J. Bland-Sutton's) is 20 inches in length. Here, as in other cases, the mass of hair is confined to an elevation covered with true skin—i.e., to the proper teratoma. But the view that such dentigerous bones represent the cephalic end of an embryo is definitely proved by the presence of central nervous tissue in connection with them. So long ago as 1853 Henry Gray described an ovarian cyst containing a tooth and hair, and projecting into this cyst was an eminence about the size of a walnut, situated near the dentigerous bone referred to ; the wall of this eminence was delicate, its inner surface was highly vascular, and the contents consisted of a soft white substance, the surface of which was perfectly smooth and presented all the characters of brain. On microscopical examination it was found to consist entirely of the ordinary elements of nervous matter, being composed of a very large number of varicose nerve tubules of varying size intermixed with the "elementary compounds of grey matter — viz., nuclei and nucleated vesicles containing granules."

Mr. Shattock also demonstrated the presence of a stomodæum with two lips and an appendage containing elastic

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cartilage and representing a rudimentary pinna at the same end of an elongated ovarian teratoma. He continued :—

The astonishing excess of teeth, in rare cases met with in a teratomatous cyst, is perhaps explained by the occurrence of twin or triple teratomata in a *single* cyst. Or, it may be that the excess is brought about by an abnormal extension of the epithelial surface corresponding with that of the gum during the early enlargement of the cyst, so that the dental germs are increased in number and give rise to as many teeth or ill-deformed denticles. For even if we allow that two complete sets of teeth, a first and second, have been produced, the total (20 plus 32) would not equal the numbers which have been encountered, which may be over 100. One must not, of course, fall into the error of reckoning multiple dentigerous cysts in the same ovary as a single "dermoid," and must also recognise the possibility of such coming to communicate through their partitions so as to produce a single multilocular cavity.—*The Lancet.*

## ROOT TREATMENT AND FILLING.*

By R. J. Winn, D.D.S., Bolivar, Missouri.

In presenting to you this paper, upon the subject of "Root Treatment and Filling," I only want to give you my experience along this line, together with my methods, which I do not claim to be the only and best way to perform this operation I do claim and know that in my hands these things I shall tell you about are the best and most successful. In the treatment of those cases that come to me, where the pulps of the teeth have to be destroyed, I usually use an application of the devitalising fibres, in combination with campho-phenique or with dentalone. I say usually as a matter of expediency, because I can apply arsenic and remove the pulp at subsequent sitting in much less time than I can remove it with pressure anesthesia. I often use the latter method in these cases ; I do not (except upon rare occasions) practice immediate root-filling, and I do not advocate that practice. I sterilize those canals, and in from four days to a week I fill them, not sooner than four days, and if I cannot make it convenient to attend to them in a week

* Read before the Springfield, Mo., Dental Society.

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I change treatments. Why? Because I have had teeth get very sore to the touch after the application of fibres and removal of pulps, and also after the removal by pressure, and if they get sore, I would rather it would be before the root is filled. Why do they get sore? you may ask. Sometimes because the condition of the pulp will allow the agent to absorb more readily than another condition, which will seemingly refuse to take up a particle of the agent used; but the most common cause is that part of the nerves are left about the apex of root after being thoroughly saturated with some of the agents that are used to destroy pulps. And then, again, the common cases that we see are the ones that you can always attribute the fault to the client who does not return at appointed time to have treatment and pulp removed. If you ask me what I do when I have sore teeth from over-treatment of arsenic, I say, let it alone after the pulp is out, and if you do not get pulp in its entirety, then extract the tooth, if you care anything for your reputation.

In the treatment of the cases that come with dead pulp that are sore and inflamed when we first see them, I at the first sitting remove the contents (as nearly as I can) of the pulp chamber and canals, and after washing with sterilized warm water, I treat with Oxpara powder, made pasty with wood creosote. In first treatment I use care not to pack cotton tight; as a usual thing, there are gases present, and to pack cavity tight will cause trouble. I have also treated this class of teeth very successfully with oil of cassia, campho-phenique and other remedies, but the Oxpara seems to accomplish a cure more readily than any other preparation that I have used.

The other classes that we run on to when we least expect or want to are the ones that cause the trouble. When they come already sore, we can't be held accountable, but when everything is lovely and you just do something that seems very insignificant to patient at the time, and about the first thing you see the next day is that person with a very sore tooth; then it is that you are apt to lose one of your "geese that lays the golden eggs."

I have heard of people who did not hesitate to fill that tooth immediately; I would not do it. I get the strongest disinfectant that I know of into that tooth as quick as I can, and at the same time I tell that patient what may happen before 12 hours. I do not fill any of these cases, the former

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or the latter, until I am sure that all is well, and then I pack with sterilized cotton and wait until it is convenient to complete the operation.

In the cases that have fistulous openings, we were taught at college to clean out everything in tooth and canals and fill immediately. I treat these about as I do the others before fillings are inserted. If a condition exists that will cause a severe abscess, that condition should be corrected before the operation is completed. I want to impress this fact: we cannot be too careful about this class of work.

Now the fillings: I believe that if the canals are filled with any solid material that we can feel reasonably certain that the tooth will not cause any trouble. I have for several years used for root-filling gutta-percha points, wood points, the same that you have seen Dr. B. Q. Stevens use at our state meetings. I use forma-percha instead of the chloropercha; I think the formalin in the mixture is an addition worth considering on account of its preserving qualities.

I advocate the use of the rubber dam, but do not use it all the time. The essential thing is to have the tooth and canals dry. I use hot air. I think a few drops of alcohol or chloroform in the canals and evaporated with hot air will usually give a dryness that we want. I usually follow with cotton on a broach to see if everything is dry, in large and medium canals. I use gutta-percha points always, but in small ones I use the wood points always, and if I cannot select a wood point small enough I draw them through a folded disk until I can insert them into the canal. I pump forma-percha into the canals before I insert points, and by using a pumping motion with the point, I work the air out, and then push the point gently to place. The wood points I dip into the forma-percha and let it dry, and when everything is ready, I warm the point and insert it in the same manner as I do the gutta-percha. If you will notice, these wood points will admit of considerable bending, and I can usually force them into a crooked root very well.

I use Donalson's broaches and canal-cleaners, as I do my work better with them than any broaches that I have used. After the cleansers have served their usefulness, I make my smooth broaches out of them by filing the barbs off and making them perfectly smooth by drawing them through a folded disk, and in this way can make a smooth broach that will go into the very smallest canal, and if the canal is not

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straight it will follow the curve about as well as any that I have seen. The metal in these broaches is very tough and gives very little trouble about breaking.—*Dental Summary.*

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## THE TREATMENT OF DISCOLOURED TEETH.

By R. G. Fitchie.

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The causes of discolouration in the teeth may in a general way be divided into three classes, viz. :

First. Discolouration caused by the death of the pulp.

Second. Discolouration from the death of the pulp following exposure of that organ.

Third. Discolouration from other causes, such as metallic stains, etc.

Consequent upon the death of the pulp from the first two causes, the tooth ordinarily assumes a pinkish hue, turning in time to yellow, then brown, and in course of time to a slaty gray, or even black. Herein lies the necessity for treatment, especially in an anterior tooth.

The cause of discolouration attendant upon the death of the pulp is to be looked for from the vascular supply of the tooth.

We are all familiar with the series of changes which take place in the colour of the tissues in an ordinary bruise, viz., first, an excess of blood in the affected part, causing extreme redness, this being followed by a darkening of the tissues until the well-known black condition is arrived at. This will serve as an illustration of the series of changes taking place in the process of discolouration. In a tooth there is the production of hydrogen sulphide, due to the decomposition of the protoplasmic pulp elements, and this coming into contact with the hæmoglobin results in the formation of a compound of dirty green colour. Then again, the iron contained in the red corpuscles must be considered, and, in reality, this is the most important factor causing discolouration. In the case of teeth where death of the pulp is due to exposure of that organ by caries, by a blow, thermal shock, etc., the colouring matter in the blood is more quickly reduced to its lowest terms. This fact explains the rapidity of the process in these particular cases. In addition to this is the fact that astringent or coagulant substances may be

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introduced into the tooth, and thus permanently *fix* the colouring matter. The application of medicaments to teeth containing metallic fillings, or the use of such drugs as iodine or sulphuric acid in connection with steel instruments, may also produce stains extremely difficult to remove.

Two general classes of substances have been successfully used as bleaching agents :

First. Those which act by virtue of the oxygen which they give off in the mascent condition, these being known as oxidizing agents.

Second. Those which act by virtue of their strong affinity for oxygen, and are known as reducing agents.

The first or oxidizing variety destroys the colour molecule by seizing upon its hydrogen to form water, while the reducing agents act by removing the oxygen from the colour molecule to form by-products, depending on the character of the agent used. Chlorine, one of the most successful bleaching agents, acts as an indirect oxidizing agent. It is used in the form of chlorinated lime, the chlorine itself being liberated from its lime combination by the action of some weak acid, such as as acetic acid. Hydrogen dioxide and sodium dioxide are direct oxidizers. These two agents and chlorine are the substances most commonly used in dental practice for bleaching discoloured teeth.

Before explaining the technique of bleaching by means of chlorine, it is necessary to say that all organic compounds which are the products of vital processes of the animal body contain hydrogen as an important constituent. Thus when chlorine is brought into contact with any of these products, and especially the coloured variety which we encounter in the teeth, it acts by seizing upon and combining with the hydrogen of the organic pigment. The identity of the compound is thus destroyed, and its characteristic feature, that of colour, is lost.

Before beginning the actual operation of bleaching, the tooth should be brought into a comparatively healthy condition. All septic material should be removed from the canal and pulp chamber, and the apical foramen sealed with gutta-percha, which should extend about one-third the length of the tooth from the apex. This is done in order that part of the tooth beneath the gingival margin may be bleached, and is especially necessary where there is recession of the gums. The rubber dam should in all cases be adjusted so that there

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is no possibility of leakage, and only the tooth to be bleached should be isolated ; all fillings and softened tooth structure should also be removed, and the cavity and canal well washed with a solution of borax in distilled water, to remove by saponification all fatty material which might hinder the action of the bleaching agent.

Having cleansed the interior of the tooth thoroughly, it should be well dried out, when it is ready for the reception of the chlorinated lime.

This may be applied in several ways :

First. By packing the dry powder into the pulp chamber and then moistening with acid.

Second. By mixing the powder with distilled water to make a paste, packing this in the pulp chamber, and moistening it with acid.

Third. By moistening the interior of the tooth with acid, dipping the instrument into the powder, then into the acid, and carrying the mixed materials into the tooth.

Having accomplished the object by any of these methods, the cavity should be sealed by gutta-percha. All instruments used in the operation should be of vulcanite, bone, wood, or ivory, as instruments of steel, platinum, or gold would, by the action of chlorine upon them, cause a permanent staining. When the tooth has been restored to its natural colour by means of repeated applications, if necessary, it should be washed thoroughly with hot distilled water and dried out by means of hot air. After this the canal, pulp chamber, and cavity should be filled with oxychloride of zinc until the permanence of the operation has been established. One method of preventing a recurrence of discolouration is to saturate the dentine with the solution of pyroxiline called "cavitine." Several other methods of applying chlorine are employed, but the one described, which is that of Dr. James Truman, has achieved the best results.

In addition to this method we have the hydrogen and sodium dioxide methods. These substances bleach by virtue of their power to evolve oxygen in the nascent condition. In bleaching with $H_2O_2$, a 25 per cent. ethereal solution is applied to the interior of the tooth by means of cotton on a fine canal instrument. After applying the dioxide, the solution is evaporated by means of hot air, and the treatment continued until the discolouration has been removed. It has been found to produce better results if the solution is rendered

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alkaline, which is easily accomplished by the addition of a solution of one of the caustic alkalies; for instance, sodium dioxide.

The sodium dioxide method is in many respects similar to the hydrogen dioxide method, but $NaO_2$ has the additional property of saponifying any animal and vegetable fats contained in the dentinal structure, so that they may be washed without difficulty.

The solution is made by pouring into a glass about two drams of distilled water; this is placed into a larger vessel containing ice, in order to prevent a rise of temperature when the sodium dioxide is added. If the temperature is allowed to rise, oxygen is evolved, and the solution is useless. The powder is added slowly until the solution assumes a semi-opaque appearance, indicating saturation. It is then ready for use. The solution is carried to the canal on the asbestos fibre. After the dentine is thoroughly saturated with it, application of a 10 per cent. solution of sulphuric acid is made. This neutralizes the strong alkali. The tooth should now be thoroughly washed out with hot distilled water and the whole operation repeated until the desired effect is obtained.

In all these operations the rubber dam should be used, on account af the caustic action of $Na_2O_2$, which decomposes animal tissues, and if possible a rubber apron to protect the clothes of the patient.—*Penn Dental Journal.*

## EFFECTIVE TREATMENT FOR LOOSE TEETH.

A CORRESPONDENT to the *Western Mail* writes as follows: "Your London correspondent has recently published in the columns of the *Western Mail* an account of the benefits which he has derived from a system of electric baths. I, therefore, am emboldened to send you a short statement regarding a comparatively new dental discovery of great importance.

During the past few years two or three of my teeth, although perfectly sound, have dropped out, owing to the gums having receded. I consulted my own dentist, a very eminent member of the profession, who told me that the disease was common, and that there was no cure.

Some months subsequently I happened to meet a friend, who told me that his wife had suffered in the same way,

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but that she had undergone a new treatment, which had caused the loosened teeth which had not already disappeared to grow firm in their sockets. On inquiry, I found that the treatment consisted of a special method of cleaning the teeth, and of injecting antiseptics and stimulants into the gums by the aid of electricity.

I again saw my own dentist, who told me that he had heard of the treatment, and that he was about to try it. He suggested, however, that I should place myself in the hands of the dentist by whom it had been originated. I did so twelve months ago, with the result that my teeth have now become quite firm in their sockets. Last week I showed them to my own dentist, who said that he was convinced of the beneficial character of the treatment, and that he is now using it freely.

It is not customary to intrude medical and surgical details into the columns of a general newspaper, but the matter is one of such importance that I think it desirable to send you this communication. If it serves to prevent only a few of your charming lady readers from becoming toothless, I shall be satisfied, I should advise sufferers to ask their own dentist to apply the treatment. But let them be sure that the dentist first obtains all necessary particulars. Everything depends upon the manner in which the treatment is carried out. Unless the disease (called by dentists, I believe, "Pyorrhœa Alveolaris") is taken at an early stage, it is necessary to renew the treatment every six months But one does not grudge four guineas per annum for the purpose of retaining one's teeth.

I may say that there is no patent in the treatment, and that the discoverer is only too pleased to place all information at the disposal of his fellow practitioners. Many English people suffer from projecting upper teeth. We all know how the English woman is depicted in the foreign papers. I am told that this is frequently due to the same disease, and that the offending members can be put into their places by means of the treatment above described, together with certain other remedial measures."

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# Dental News.

## MANCHESTER DENTAL HOSPITAL.

THE Victoria Dental Hospital will in future be known as the "Manchester Dental Hospital," or "The Dental Hospital of Manchester." It is thought by members of the Committee of Management that the reason for retaining the word "Victoria" has disappeared, and that certain advantages would accrue if the word were dropped. The question was raised at the annual meeting of the institution held recently, when a resolution was submitted and approved to the effect that the word "Victoria" should be expunged, and that it be left to the Committee of Management to decide whether the name of the city should come first or last in the official designation.

Since the hospital was opened in 1884, the number of patients treated has been 293,452. During the past year the patients numbered 13,787, of which 10,552 were adults and 3,235 children. Mrs. Christie has sent the Committee a further contribution to the denture account of £100 since the close of the year. The amount owing to the treasurer at December 31st last was £698 as against £848 at the end of the preceding year. This, however, is not actually the case, as the Committee have rearranged their funds, and thus brought into the general account an amount equal to two-thirds of the deficiency, and this sum has been included in the income for the year. The Committee make an earnest appeal for further funds, and call the attention of their subscribers and friends to the increased expenditure which will become necessary for the maintenance of the new hospital. The Committee thank the donors for their contributions to the building fund, and mention with satisfaction that since the close of the year they had received from the trustees of Mr. Godfrey Ermen the sum of £3,000 the cost of the site and chief rent, thus making a gift to the institution of the site free of charge. The new building will cost about £16,000, and about £3,000 is still required to enable the Committee to open the building free of debt.

On the motion of Mr. Copenger (who presided), the report was adopted. The Chairman said how gratified they were with the generosity displayed by the persons mentioned in the report. He added that the £2,000 left to the institu-



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tion by Mrs. Rylands would aid them considerably in meeting the increased expenditure which removal to the new building would entail. They hoped that the new hospital would be opened by the King when he visited Manchester to open the Royal Infirmary. It was stated that the new premises would be ready for occupation in August or September. The officers were re-elected, and the members of the staff were thanked for their services.

## ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

During the April Examinations the following gentlemen passed the First Dental Examinations: William Alexander Blyth Clark, Manchester; William Alister Allan, Grantown-on-Spey; William McPherson Lamont, Montrose; Alexander Graham Munro, Edinburgh; Hugh Templeton, Porteous, Melbourne; William Dippie, Edinburgh; John Brown Thomson, Thornhill, and James Pinkerton, Glasgow, and the following gentlemen passed the Second Dental Examination and were admitted Licentiates in Dental Surgery:—Rennie Waugh Shortreed, Hawick; Arthur Black, Berwick-on-Tweed; Robert Alexander Gunn, Edinburgh; Alexander Grant Legge, Kilconquhar; George Taverner Hoyes, Wigtown; Dorothy Rose Humby, London; Robert Maxwell Weatherston, Newcastle-on-Tyne; Patrick Raoul Eskell, L.R.C.P. & S.E., etc., Port Elizabeth; Andrew Jeffrey, Edinburgh; Thomas Cochrane Symington, Edinburgh; James Craig, Kirkcudbright; Thos. Frederick Sutcliffe, South Shields; Andrew Balfour Tait, Portobello; Alexander Macdonald Watt Cormack, London; William Brown, Whitehaven; Stanley Wilson, Sunderland; William Stoddart, Edinburgh; Henry Alvin Mahony, Bradford, and James Starke Barr, Kilbarchan.

## BIRMINGHAM DENTAL HOSPITAL.

The forty-seventh annual report of the Birmingham Dental Hospital shows that there was during the year a slight decrease in the number of patients, but an increase in the total number of attendances. This showed more attention to individual cases. The number of ordinary extractions had gone up, indicating a continuance of the alarming progressive decay of teeth to which the public now seems liable.

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This view was corroborated by the results of the attention bestowed on the children of the elementary schools of the city through the generosity of an anonymous benefactor. Out of 2,733 mouths of children charted, 2,629, or 96 per cent., required attention. That only 4 per cent. of the rising generation should have normal healthy dentition was an ominous fact as bearing on the future of the race. Here, again, the number of extractions was very great, while the timely relief given by the large number of fillings was calculated to diminish the sufferings of many future adult citizens. The statistics showed that altogether the number of operations was 24,039, as against 21,308 in 1906, the number of new patients 5,255, compared with 5,408, and the total number of attendances 11,371 against 10,123.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An Ordinary Meeting of the Council was held on March 12th, Mr. Henry Morris, the President being in the chair.

The Committee re-elected Mr. W. A. Maggs a member of the Board of Examiners in Dental Surgery.

A letter was read from the Registrar of the University of Liverpool communicating a resolution adopted by the Council of the University on the recommendation of the Senate and the Board of Dental Studies. It referred to the duration of the attendance of dental students on general hospital practice. It was referred to the Board of Examiners in Dental Surgery to consider and to report.

The President stated that he had fixed July 1st, 1908, as the date for closing the poll of the Fellows and Members on the subject of admitting women to the diplomas of the College.—*Lancet.*

## ADVERTISING IN NATAL.

At the Supreme Court, Pietermaritzburg, Mr. Hime, assisted by Mr. Hunter, moved that the inquiry declaring Ridgway Haines Lamb to be guilty of disgraceful conduct in professional matters, held by the Natal Medical Council on October 11th, 1907, be held to be bad ab initio, irregular, and void, and that the finding be set aside and declared null and void, and that the plaintiff's name be restored to the Dentists' Register of the colony of Natal.

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Dr. Ridgway Haines Lamb, of 460, West Street, Durban, doctor of dental surgery, and plaintiff in the case, stated in his affidavit that on October 4th, 1907, he proceeded from Durban to Newcastle on a professional tour, and returned to Durban on October 16th, when he found a letter from the secretary of the Natal Medical Council, to the effect that an inquiry would be held on October 11th, at which he would be charged with contravening the regulations regarding dentists' advertisements, by issuing a pamphlet entitled, "The Teeth, and How to Preserve Them," and a leaflet on "The Cleaning of the Teeth." Previous to October 16th, he had received no notification of the inquiry. He had written to the Medical Council, explaining his action, on October 16th, of which letter no acknowledgment had been received. On December 24th, 1907, he received a letter from the Principal Under Secretary, to the effect that H.E. the Governor had caused his name to be erased from the list of dentists, with leave to apply for re-registration, after a period of six months. This was the first advice he had received that an inquiry had been held. No fair and reasonable opportunity of being present at the inquiry, or of rebutting the allegations made against him was accorded him. He denied that he had been guilty of any disgraceful conduct in professional matters, or any conduct that would entitle the Medical Council to adjudge his name to be erased from the register. He was confident that he could have satisfied the Council on this point had he been present at the inquiry. The action had rendered him unable to fulfil outstanding appointments and to keep together his practice, which was extensive and long established. His power to provide for his wife and children was stopped, and his professional reputation, for the time being at least, was blighted. The receipt for the letter from the Medical Council had been signed by a clerk in a chemist's shop over which he had his premises. This person had no authority to so sign.

Dr. Lamb held that his book contained no dental advertisement, but was information for the public. The leaflet advertising his tooth powder he had failed to discover was illegal, and considered he had a right to make and advertise it.

An affidavit by Fleming Johnston, chemist, of Durban, said that the registered letter had arrived during Dr. Lamb's absence, and he had not received it until October 16th. This

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was corroborated by the clerk who signed for the letter. Dr. Lamb had not been advised that such a letter awaited him. Dr. Gray, of Durban, also testified to Dr. Lamb's absence from town.

Dr. Campbell Watt, Secretary of the Medical Council, stated that, after he received plaintiff's explanatory letter, a meeting of the Council had been held, and it was resolved "that the Medical Council sees no reason to depart from its previous decision. As regards the booklet, in the opinion of the Council, it constitutes an advertisement in respect that it contains matter not purely of a scientific interest, tending to depreciate schools of dentistry other than the American, his own, and, at the same time, gives his name, profession, and address; while the fact that it has been sent to others besides members of the dental profession, accompanied by a covering letter, constitutes a further infringement of the regulations." The plaintiff had received four previous warnings in consequence of his infringing the regulations.

Dr. Lamb filed an answering affidavit to Dr. Watt's.

Mr. Murray appeared for the Medical Council, and took exception to the action, questioning the jurisdiction in the Court in dealing with a matter already decided by the Governor in Council. He quoted cases in support of his contention that matters dealt with by the Governor could not be appealed in the Courts of the colony.

Mr. Hime said he was content to forego the restoration of plaintiff's name to the register, if the Court would decide as to the resolution of the Medical Council.

Mr. Justice Beaumont, in conveying the decision of the Court, said that had it been only a question of the Medical Council's action, the Court could have gone into the matter and dealt with it. However, only a recommendation had been made by the Medical Council, and the Governor in Council, after being satisfied as to the facts, had caused Dr. Lamb's name to be erased from the list. The Court had jurisdiction over all lower courts, and over Boards, but could hardly intervene in the case of an order made by the Governor in Council. In his opinion, they had no jurisdiction to interfere in the present case.

Mr. Justice Dove Wilson concurred, and said that the law provided for the Medical Council holding an inquiry only, the decision to be come to by the Governor in Council, who had himself to be satisfied by proof that the allegations

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were correct. He could not assume that the Governor had come to his decision simply on the finding of the Medical Council, but could only assume that he had satisfied himself as to the proof. If the Court found that the proceedings of the Medical Council were wrong, it was not bound to influence the matter in any way.

Mr. Justice Broome concurred.

Costs follow the result.

## FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

The following candidates completed the first examination for the license in dental surgery at the examinations held in March and April :—

Gerald James E. Agnew, John Miller Chrystie, Llewellyn Saltonstall Farrar, James Charles Harrison, John Bramwell Hartley, David Lindsay Hutton, Ronald Alpin M'Alpin, George Henry Mackenzie, John Charles Milligan, Glen Muir, William Baker Mullins, Leopold K. Percy, Thomas Rankin, Alexander Redford, Christopher Briscoe Robinson (with distinction), William Potter Thompson, Alexander Watson, Robert Stobo Watt, Herbert Ernest Wilkie.

The following candidates passed in the final examination and obtained the diploma in dental surgery :—

Hugh M'Phee Angus, Glasgow; William Francis Birrell, Birmingham ; Madeline Louise Bostock, London; William Richard Ward Booth, Birmingham; Joseph Roger Brown, Stoke-on-Trent; Laurence Russell Brownlee, Airdre; Arthur Emslie Bell Cradock, Bearsden; William Glynne Edwards, Holyhead; Llewellyn Saltonstall Farrar, Sowerby Bridge; James Mudie Petrie, Paisley ; Frederick Thomas Wild, Newcastle.

## ROYAL DENTAL HOSPITAL.

The Hon. W. F. D. Smith, M.P., presided over the 50th annual meeting of the Royal Dental Hospital, held in the building in Leicester-square.

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In moving the adoption of the report the Chairman said this was the jubilee year of the hospital and he expressed the hope that the special appeal which would be made in connection with the festival dinner would be successful in removing part of the mortgage of £47,000 on the hospital, the interest on which must hamper its work. The number of operations performed last year was 104,745, as compared with 19,255 in 1874. Dental education, continued Mr. Smith, began under the auspices of this hospital and had spread to other institutions. The hospital might well be regarded as a national one. There was hardly anything more important to the body than the care of the teeth, and yet hardly anything else in the body was more neglected. Amongst recruits who sought to get into the Army, a large proportion were rejected owing to their teeth being too bad to eat Army food.

The motion was seconded by Mr. J. H. Hale (chairman of the Committee of Management).

The report having been adopted the Chairman proposed a vote of thanks to the committee and the medical staff.

Mr. Stuart Samuel, M.P., in seconding, suggested that false teeth should be supplied to poor patients at reduced charges.

The vote was carried.

Prebendary Shelford, in moving the re-election of the committee, told the story of a minister who, on his jubilee, was presented with a set of teeth, and in the course of his first sermon afterwards the teeth fell out of his mouth on to the precentor below. Since then the making of false teeth had improved.

The committee and officers were re-elected, and the meeting closed with a vote of thanks to the chaiman.

## DENTISTS AND THEIR CHARGES.

"If a dentist accomplishes exceptionally fine work he is entitled to charge as high a fee as he thinks his client can afford to pay," said a well-known London dentist to the *Daily Mirror* recently, apropos the lawsuit just decided in the courts.

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"A fee is of relative value. That is to say, if a labouring man went to have his teeth attended to he would go to a dentist whose charges he had first ascertained to be moderate.

"His bill of probably 20s. would be equivalent to £500 which a very wealthy man might pay.

"It is pretty much the same with regard to doctors' fees. In the City a poor man can get medicine and a prescription for 2s. 6d. and 1s. 6d., where a West End doctor would charge two guineas at least.

"I naturally do not care to express any decided opinion on the law case just concluded, but I will say this, that the fee of two guineas per half hour mentioned is generally asked in America, where dentistry has, so it is claimed, made greater scientific advance than has the profession in this country.

"Many men on both sides of the Atlantic have made, and are making, comfortable fortunes out of dental practice.

"If a man puts real honest hard work, coupled with genuine skill, into the task he has undertaken for a client, he is surely entitled to make the best bargain he can, and if —as he should do from the point of view of mutual satisfaction—he states his fee beforehand, the client can either accept or refuse prior to the work being commenced.

"Dentistry is a fine art, and far bigger fees are paid for high-class work than the public has the slightest idea of. For instance, take the case of a lady who has only a few stumps left in her head. If she could not afford to pay much money the dentist would advise her to have all these stumps extracted and have a plate.

"On the other hand, if she were wealthy, or even moderately well-off, a dentist would advise her to let him devote his best workmanship and skill to fixing teeth singly, and the time he might give to the patient—well, it might be very considerable."

Another dentist enjoying a large practice among the middle classes said he thought the profession suffered much loss of practice owing to the large fees charged by some dentists.

"There is a prevailing impression among people of many classes—not merely the poor—that dentists' charges are altogether prohibitive, and so they try to do without having their teeth attended to at all.

"This is a very erroneous idea, and ought to be dispelled.

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Because a few West End practitioners charge guineas, that is not to say the average dentist does, too."

At one of the dental hospitals the *Daily Mirror* was told that the profession was not overcrowded.

## GLASGOW DENTAL HOSPITAL.

The first public distribution of prizes in connection with the Incorporated Glasgow Dental Hospital took place in that institution, 15, Dalhousie Street. Sir James Fleming presided, and among those present were Dr. Henry E. Clarke, Mr. Young, Mr. W. B. Hepburn, Mr. Stromyer, Dr. M'Millan, and Dr. W. D. Anderson. The Chairman remarked that the directors rejoiced at the formation of the Students' Union. If it was conducted on right lines it would prove a great benefit to the hospital. Dr. Clark addressed the students. At the outset he referred to the enormous number of unqualified dentists who were practising in Great Britain, a number which he estimated as not less than twice the number of qualified dentists. This was partly due to the inability of the general public to distinguish which were qualified. The Dentists' Act, passed in 1878, was intended to stop unqualified practice, and that it had become so largely a dead letter was because of the supineness of the Crown authorities, who did not prosecute, and because the dentists had no proper representation on the General Medical Council. The whole of the qualified dentists in Britain should combine to get these two grievances removed. There were some, he said, who admired the American method of letting all quacks and unqualified men have the same freedom to practise as the scientific and the qualified. That has never been accepted as the ideal method in this country, and if it were adopted would lead to much confusion. To submit one's teeth to the management of some of the unskilled practitioners they knew of would be as wise as to leave one's gold lever watch to the repairing hand of the village blacksmith. If dentists desired to take their place among the learned professions they must have a good preliminary education, must be well trained in dental hospitals and dental schools, and must be tested by fair but thorough scientific and practical examinations. For these reasons he pleaded for the better equipment of the dental schools and for more generous public

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support of the dental hospitals. Referring to their own school, he said the number in actual attendance during the session just completed was forty-six. The school had, indeed, grown so large that alterations had lately become necessary in the lecture room in order to admit all the students attending some of the classes. Much more required to be done in the way of providing museum accommodation, laboratories, library, etc., and a committee of managers had been for some time considering the necessity for asking public support towards a scheme of expansion. Hitherto both the school and hospital had been maintained largely by the fees of the students. As the hospital was a public charity of the same nature as our infirmaries, and only incidentally served in some measure for the technical education of dentists, it should be maintained by public benevolence. This was far from being the case, as in no year since the foundation of the hospital had the public subscriptions reached £100. He thought people imagined that attention to the teeth was mainly for the purpose of preserving a good personal appearance. This in itself was no small matter, but much more important effects remained behind. He instanced such conditions as dyspepsia, bronchitis, pneumonia, enlarged glands in the neck, and enlarged tonsils as associated with neglect of the hygiene of teeth, and said that even diphtheria was more liable to be caught and was more dangerous in those whose mouths and teeth were in a bad state. Finally he claimed for the dental profession a high place in our modern civilisation, and said that dentists could only take that place if well educated, highly trained, filled with high moral purposes, and regarding their work as somethiug more than a means of getting a living or acquiring wealth.

The prizes were distributed, aud the proceedings ended with the usual vote of thanks.

## DENTAL SURGEONS' BILL IN THE ISLE OF MAN.

In the House of Keys, referring to the Keys amendments in the Dental Surgeons' Bill,

The Attorney-General: They have made very little alteration in that, except that they have set up a separate register.

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The Governor: They have also made an alteration in the date when the Act comes into operation.

The Attorney-General read clause 11 of the Council's Bill.

> This Act shall not apply to any person bona fide engaged in the practice of dentistry or dental surgery in this Island either separately or in conjunction with the practice of medicine, surgery, or pharmacy, upon the 1st day of January, 1908.

The Attorney-General said that would have thrown on any one who was charged with an infringment of the Act, and who relied on the fact that he was practising on this date, the onus of proving that he was so practising. The Keys seek to achieve the same thing by a different road. They propose that the person who was practising should claim to be put upon a supplementary register to be kept at the Rolls office; he must go there and satisfy the Clerk of the Rolls that he was so practising, and registration resulting on that is to be conclusive afterwards as to the fact. They are two ways of doing the same thing. Do you see any inconvenience, Clerk of the Rolls?

The Clerk of the Rolls: Not at all. It is not a matter worth differing about.

The Attorney-General: No. It would have been a very different thing if they had applied to have a local register.

The Clerk of the Rolls: It is only a temporary thing.

The Attorney-General: It has been pointed out to me that we have not made provision for exempting students; they are allowed in England. Still the Keys have not done it, and we cannot interfere now.

The Governor: We agree to their amendments right through. (Agreed).

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THE ROYAL DENTAL HOSPITAL, Leicester Square, has received a donation of Fifty Guineas from His Majesty the King.

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# Legal.

## ACTION TO RECOVER FEE.

At Birmingham County Court, before his Honour Judge Amphlett, K.C., William Price, commercial traveller, was sued by Arthur Brittain, dental surgeon, of Bennett's Hill, Birmingham, in respect to a cheque for £7 7s., which had been dishonoured.

Mr. Blakemore said plaintiff, whom he represented, was suing for the amount of the dishonoured cheque and expenses, and he left it to defendant to prove why the cheque should not be paid. Mr. Jesson, for the defendant, said the facts of the case were peculiar. It was a question of whether defendant had obtained what he ordered, and for which he paid with the cheque. The claim arose out of some false teeth which the plaintiff had supplied. The teeth did not give satisfaction, and defendant stopped payment of the cheque.

Defendant said plaintiff put four more teeth in the upper plate than he wished, and the plate went too far back in his mouth. He did not require a lower plate.

Cross-examined by Mr. Blakemore, defendant said he did not expect new teeth to feel like cotton wool in his mouth. He admitted he left himself in Mr. Brittain's hands as a qualified dentist, and also that he had refused to allow Mr. Brittain to examine the plates in his mouth.

Mr. Brittain said it was impossible to see what was the matter with a patient when he refused to sit in a chair, or let him examine his mouth.

His Honour said the defendant had not made out his case, and he gave judgment for the plaintiff for the amount claimed.

## BINDING-OUT AGREEMENT.

Sittings at the Assize Courts, Manchester, before Vice-Chancellor Leigh-Clare.

Mr. Glover, on behalf of the plaintiff, in the case of Merrill v. Kilsby, moved for an injunction to restrain the defendant, till trial of the action, from carrying on the

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business of making artificial teeth, &c., in violation of the terms of an agreement of service. It was explained that the plaintiffs carried on a large business, with upwards of two hundred branches, distributed over various districts. Their present complaint arose in respect of the Furness district, of which the depot was at Barrow. The defendant entered their employment in 1906, beginning in the Blackburn disrtict. From there he was in February, 1906, transferred to Barrow. Under his agreement he was to be paid a salary and commission, and to be subject to a covenant not to carry on a similar business either on his own behalf or in connection with any other firm than the plaintiff's. In January last the defendant left the plaintiff's firm, and it was admitted that he had broken the covenant.

Dr. Atkinson (instructed by Messrs. Carter and Crellin, of Blackburn), on behalf of the defendant, said that his client had at first refused to sign the agreement on account of the inclusion of this particular covenant, and it was only when a manager had discovered a mistake in his books and under the threat of instant prosecution, that he had eventually done so. His case was that the agreement was not binding.

The motion was eventually adjourned till the trial of the action, which was fixed for Tuesday, April 7th.

## THE VETERINARY SURGEONS ACT, 1881.

At Kingston, before the mayor (Councillor Lambourn) and other magistrates, Matthew Collinson, of Cambridge Road, Norbiton, appeared on remand to answer a summons for having on January 15th, not being on the register of veterinary surgeons, and not holding at the time of the passing of the Veterinary Surgeons Act, 1881, the certificate of the Highland and Agricultural Society of Scotland, used and taken the addition and description "Canine specialist—dogs and cats treated for all diseases," and thus stated that he was specially qualified to practise a branch of veterinary surgery, contrary to section 17 of the said Act. The case was before the Bench on February 12th this year, when, the facts being admitted, the magistrates dismissed the summons, on the ground that in the description, "Canine specialist—dogs and cats treated for all diseases," which was exhibited on a board

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outside the defendant's premises, the defendant did not hold himself out as being "specially qualified" to practise a branch of veterinary surgery. On the application of Mr. G. Thatcher, who appeared for the Royal College of Veterinary Surgeons, the Bench stated a case for the Divisional Court, and the appeal was heard before the Lord Chief Justice, Mr. Justice Ridley, and Mr. Justice Darling on April 7th and allowed, the case therefore being remitted back to the Kingston Bench for conviction. Mr. Thatcher, who again appeared for the Royal College, after reciting these facts, said the Royal College were not actuated by any vindictive motives in this prosecution, and as a proof of it they demanded no costs against the defendant in the Divisional Court, and asked for none in the lower Court; but it was their duty to see that the Act, which was passed with the object of protecting dumb animals from being treated by unqualified persons, should not be lightly broken, and that was their only aim in the prosecution. He added that as the defendant was a poor man, and had recently had a severe illness, and had promised to endeavour to meet the wishes of the Royal Society, the society would be satisfied with a conviction and a fine of 1s. The Mayor said that there would be a conviction, and that the fine would be 1s., without costs.

## DAMAGES FOR MALPRAXIS.

Mrs. A. Schorshy, a dressmaker, of Davis's Mansions, New Goulston Street, E., sued at Whitechapel Joseph Weinberg, of Whitechapel Road, E., an "unregistered dentist," for damages for alleged negligence.

It appeared that on November 27th Weinberg extracted one of her teeth. As the pain continued she returned, and he took out another tooth, next to the first one. The extraction caused so much pain that she fainted in the chair. Three days later the dental surgeon of the London Hospital removed two stumps. Subsequently Dr. Ricketts removed a portion of the jaw bone from the place where Weinberg had extracted the first of the teeth, He was of opinion the forceps had been forced too low down, and thus wrenched off a portion of the bone.

His Honour found that defendant had been guilty of negligence, and assessed the damages at £13 10s.

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# Obituary.

## MR. JOHN COTTAM, L.D.S.I.

We regret to record the death of Mr. John Cottam, L.D.S.I., which took place at Caxton House, Oswestry. Mr. Cottam, who had for many years been associated with the life of the town, had had an interesting career. Born at Preston, seventy-nine years ago, he emigrated to the United States, 1849. Whilst staying with his uncle in Newburgh, New York, he met Dr. C. W. Grant, dental surgeon, whose pupil he became, and whom he ultimately succeeded in business. Returning to this country, he spent some time in London, and in 1868 settled in Oswestry, where he began practice as a dental surgeon, a practice which has, since Mr. Cottam's retirement, been carried on by his sons. Since his settlement in this country, Mr. Cottam paid two visits to the United States. In 1874 he was elected a member of the Oswestry Town Council, on which body he served for eighteen years. He was offered the position of mayor, but declined the honour. Mr. Cottam was a Churchman and a Conservative. He was a Licentiate in Dental Surgery of the Royal College of Surgeons, Ireland, and for many years he was a member of the British Dental Association, and was formerly dental surgeon to the Oswestry Cottage Hospital and Dispensary.

Mr. Cottam, who had been a widower for fifteen years, is survived by two sons and two daughters.

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The Practice of Medicine by a Corporation.—The question has arisen in the courts of New York, Can a corporation practise medicine under the laws of the State? The law reads as follows: "Any person not a registered physician who shall advertise to practise medicine shall be guilty of misdemeanor." The meaning "to practise medicine" is thus defined by statute. "A person practises medicine within the meaning of this Act ..... who holds himself out as being able to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity, or physical condition, and who shall either offer or undertake by any means or

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method to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity, or physical condition." An important decision has recently been rendered by the Court of Special Sessions of New York in the case of a certain corporation which was prosecuted by the New York County Medical Society. The corporation claimed that it was not violating the law because the law specifies "person," and as it was a corporation it did not come under that definition. The corporation was convicted and a motion to acquit was denied. This decision will affect large numbers of corporations in the State which are advertising their methods of treatment of diseases.—*The Lancet.*

# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street, London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

No notice taken of Anonymous Communications. Name and address must always be given, although not necessarily for publication.

We cannot undertake to return communications unless the necessary postage stamps are forwarded.

It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.

All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291, Regent Street, London, W.

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British Journal of Dental Science

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# PROLONGED NITROUS OXIDE AND OXYGEN ANÆSTHESIA FOR DENTAL OPERATIONS.

By H. Bellamy Gardner, M.R.C.S., L.R.C.P., London.
Late Instructor in Anæsthetics at Charing Cross Hospital, Assistant Anæsthetist at the Royal Dental Hospital of London, &c.

In a paper which I contributed to the transactions of the Odontological Society of Great Britain in January, 1907, I described the apparatus and method by which nitrous oxide with variable percentages of oxygen may be continuously administered by means of a combination of Mr. H. I. Paterson's nosepiece, Dr. Hewitt's mixing chamber, and Dr. A. G. Levy's double gas bag with a specially designed removable valve chimney made for me by Messrs. G. Barth & Co.

The object of the present paper is to report upon a further extensive use of this method for dental operations which require anæsthesia of more than one minute's duration. Experience shows that a great increase both in the precision and comfort of the dental surgeon's work is attained by the absence of the need for haste in its performance.

It is so frequently impossible to foretell what difficulties may arise during the extraction of teeth that, with this pro-



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longed method at his disposal; the administrator feels daily more inclined to use it in all but the very simplest cases, not only for the benefit of the operator, but for the credit of general anæsthesia with the public. By the ordinary method of administration he has only a very poor resource in giving a second dose of the gases because the duration of unconsciousness so produced is even shorter and generally less tranquil than that of the first dose. Even when one tooth only is to be extracted it may be already broken off or so badly decayed that it is certain to break off during the operation leaving its two or three roots embedded in their sockets below the alveolar margins; it may be impacted beneath the ramus of the jaw, or between its fellows; sponging blood away is often necessary to locate remaining roots when some have been withdrawn, and, in addition to these difficulties the time taken in the extraction of teeth may be prolonged by the presence of exotoses, curved roots, or abnormal density of the alveolar process. Whenever the dental surgeon has a foreknowledge or presentiment of difficulty in the extraction it seems right that this method should be employed so that any length of complete anæsthesia may be kept up from two to five or six minutes if needed, so that it may be scientifically dealt with.

For cases requiring devitalisation of one or more teeth no system could be more perfect because after a certain amount of drilling has been carried out the painful extraction of the nerve has to be done towards the end of the anæsthesia when induced by the ordinary method. By the method now suggested there is no difference in the depth of anæsthesia until the nerve extraction has been completed and the nosepiece is removed so that the possibility of pain being felt is out of the question. In cases where multiple extractions of some difficulty and situated in various parts of the mouth have to be undertaken, it is possible to work under prolonged

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nitrous oxide and oxygen by completing the work on the left side of the patient's mouth first, *i.e.*, on the side next to the anæsthetist, because he only has his left hand free for inserting the Mason's gag; but ether is a better anæsthetic for such cases for muscular relaxation is more perfect and the administrator can render much greater assistance to the operator in a heavy task.

The applicability of the prolonged method has been extended to the case of powerful men as well as women and children by the construction of a larger size of rubber rim-pad for the nasal cap which prevents the compression of the alæ nasi which sometimes occurred with the former rims in such subjects.

After-effects upon the patient are very slight and are certainly no more frequent than those of the single dose; but it should not be forgotten that a certain feeling of malaise is likely to ensue in proportion to the severity of the operation *per se*.

Sickness in children and florid adults is most frequently caused in the course of administration of nitrous oxide and oxygen and immediately afterwards by the secretion of a considerable quantity of saliva and mucus from the mouth and tonsils which irritates the pharynx and starts the act of retching; but this is very rare when the gases are administered by means of the nosepiece.

I have never seen untoward symptoms during the nasal administration of nitrous oxide and and oxygen which, with proper management, induces and maintains anæsthesia of a tranquil type with a natural colour, respiration of normal rate and pulse of good volume and regularity.

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# AMYL ALCOHOL AND THE VALERIANATES.

By B. Bennette, L.D.S.Edin.

Valerian is a wild plant growing to its highest degree of perfection on dry soil. It is indigenous and is cultivated in England.

Valerianæ Radix (valerian root) consists of a short rhizome with a number of smaller roots measuring from one to three inches in length, yellowish brown in colour, with a bitter taste and strong characteristic unpleasant odour. Its activity is due to a volatile oil and valerianic acid.

The oil consists of valerole, and a hydrocarbon, Borneene. It is green in colour and has the odour of valerian. The hydrocarbon Borneene is similar to that found in camphor. the acid (valerianic) may be prepared from the root by distilling with dilute sulphuric acid. It is an oily liquid smelling strongly of valerian, it forms crystalline salts with metallic bases.

This brings us to amyl alcohol for which a few words must suffice.

It is contained in and constitutes the bulk of the fusel oil found in crude spirit obtained from starch, as the sugar obtained from potato starch yields a large amount, the alcohol is also known as potato oil.

Amyl alcohol is a colourless liquid, oily in consistence, with a most unpleasant odour. It is practically insoluble in water, on the surface of which it floats like any ordinary oil. When subjected to oxidising agents it is converted into valerianic acid.

Nitrite of amyl is prepared by mixing fusel oil, sulphuric and nitric acids, copper turnings, and distilling. (Amyl alcohol $C_5H_{11}OH_1$ Amyl nitrite $C_5H_{11}$ $NO_2$.) General

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therapeutics of valerian—a powerful antispasmodic and stimulant, inferior only to assafœtida in the treatment of hypochondria and hysteria. It has been employed and found useful in cases of chorea aud epilepsy.

Preparations—Infusion, tincture and ammoniated tincture.

Valerianate of soda, is prepared by distilling amyl alcohol with sulphuric acid and potassium bichromate. The alcohol is oxidised by the action of chromic acid produced by the acid sulphuric and pot. bichromate into valerianic acid, which is saturated subsequently with caustic soda. The liquid is evaporated to dryness and the product fused. It occurs in white lumps soluble in alcohol, neutral to litmus, and evolving an odour of valerian when heated with sulphuric acid. It has been used when the effects of valerian are desired, but its chief use is in the manufacture of the next drug, viz., valerianate of zinc.

This substance is prepared by mixing solutions of soda valerianate and zinc sulphate, valerianate of zinc separates out in the form of crystals, which are separated and purified by recrystallisation.

Valerianate of quinine occurs as silky white needles, odour and taste strong, sparingly soluble in water, freely in alcohol, on heating, valerianic acid is formed.

The object of this paper is not to enter into a long discussion on the therapeutic action of the various valerianates, but to point out one use of them which may be turned to the greatest possible advantages by the dental profession.

We will take the zinc salt and look into its properties. It is a nervine tonic of the highest class. It is used in cases of hysteria, chorea and epilepsy, but the greatest value of the drug from a dental point of view, is in its remarkable effect in cases of facial neuralgia.

It is usefully combined with the salts of iron and

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quinine. The dose of the metallic valerianates is from one to four grains.

The following has been found to be almost a specific for neuralgia of the head and neck :

R Zinci valerian
Ferri „
Quiniae „
} ā ā gr. xij.

M. Ft pil. 12.

S One ter in die.

The zinc salt is the chief constituent of this prescription. In cases where quinine cannot be tolerated, it may be substituted by a grain of zinc valerianate, After a considerable amount of experience the writer can confidently recommend the above, as a suppliment to ordinary dental treatment. We now come to the consideration of the last item in this paper, viz., amyl nitrite. This as previously mentioned is prepared by distilling nitric acid with amyl alcohol sulphuric acid and copper turnings. The product is purified with caustic soda, potassium carbonate and fractional distillation. It is a yellow ethereal liquid with an odour resembling that of pineapples. Insoluble in water, but readily soluble in alcohol, chloroform and ether. Traces of pure nitric acid and amyl nitrate may be present as impurities. The usual dose is three minims contained in a capsule which is broken and the contents inhaled. The action of this drug should be clearly understood by all who may have occasion to use it.

When amyl nitrite is inhaled, it immediately enters into the circulation, converting a portion of the haemoglobin into methaemoglobin, interfering with the action of the red blood corpuscles by preventing their oxygenating function. Experiments on animals have shown that less oxygen is absorbed and less carbon dioxide is excreted when the drug is inhaled.

In man the following phenomena are observed : On the inhalation of one to three drops, the face and neck and then the trunk feel flushed, the carotids pulsate visibly and there

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is a feeling of oppression, fulness and throbbing in the head, with palpitation of the heart and a tingling of the skin. Other symptoms are a feeling of restlessness and anxiety, giddiness, and dilatation of the pupils with disturbance of vision. These symptoms are transitory and soon pass away leaving as a rule only a slight headache. Large doses accentuate all the above symptoms but do not produce unconsciousness.

The action of amyl nitrite is confined almost entirely to the circulating system.

The muscular coat of the peripheral arteries are relaxed and the arteries become dilated.

The heart's beats are accelerated without any increase in force. The blood pressure falls by reason of the relaxation of pressure in the aorta and arteries generally, in other words the left ventricle finds that the work it has to do is more easily performed.

This has been attributed to depression of the cardiac centre, or the vagus, or to its action on the vasomotor centre in the medulla or on the vasomotor nerves and muscular walls of the arteries. The fact that the ventricle has less work to do and more force with which to do it, led to its use for the alleviation of the pain in angina sections.

The pain caused by aortic aneurism and disorders of the heart causing high arterial tension are often relieved by amyl nitrite.

The use to which the dental surgeon would put it is for the correction of cardiac symptoms occurring during the administration of anæsthetics, chloroform in particular. Serious results of cardiac paralysis are often successfully treated wtth amyl nitrite.

It has been found impossible in the limits of a short paper, to do more than sketch out the various agents mentioned, those desiring to read more deeply are referred to standard works on materia medica and therapeutics.

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British Journal of Dental Science.

LONDON, MAY 15, 1908.

# PROPHYLAXIS OF SYPHILIS.

THE tendency of medicine is toward the discovery of anti-toxic vaccines for the prevention and cure of many diseases which were formerly, and are still, empirically treated with drugs in a haphazard manner. But drugs have still their uses, and as an anti-syphilitic vaccine has yet to be discovered, we must be grateful to Professors Metchnikoff and Roux of the Pasteur Institute for the experiments which would seem to have proved the success of calomel, applied locally, in preventing the onset of a disease which has done more harm to the human race than probably any other in modern times.

The success of the experiments rested on the fact that the anthropoid apes were susceptible to inoculation with the disease. The discovery of the specific microbe the *Spirochæta pallida*, or as it was subsequently named the *Triponema pallidum* was also a discovery of the utmost importance, and it is not too much to hope that a vaccine may be prepared before long which may be as beneficent as the several other vaccines in daily use for the treatment of other diseases.

The history of the experiments is given in an interesting little work by Dr. Paul Maisonneuve translated by Dr. de Verteuil ("Experimental Prophylaxis of Syphilis": John Wright & Co., Bristol), and we propose to give our readers a brief resumé of the work.

The experiments on apes proved that the lesions of primary, secondary and tertiary syphilis contain an in-

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fectious virus; gummata are rarely, if ever, the starting-point of an infection. Mucous patches—such as those occurring in the mouth—are one of the most common causes of infection. It is considered impossible to contract syphilis through the intact skin or mucous membrane, though a slight scratch or excoriation imperceptible to the naked eye is sufficient to cause an inoculation. The specific microbe is found in all lesions in all stages and in hereditary as well as in acquired syphilis. The inoculation is at first a purely local infection on the surface and easily affected by a local therapeutic agent, but in a very short time, after the virus has got into the blood, it becomes a generalized disorder and can no longer be affected by a local treatment. It is therefore most important to act promptly on any suspicion of contagion.

Mercury has been used as a remedy in syphilis for hundreds of years and it was only natural it should be tried in these experiments. Various preparations were used with varying success, until it was found that liquids and solutions containing mercury were inefficacious, but that an ointment composed of calomel 10 grs. and lanolin 30 grs., well rubbed into the lesion within a short time after inoculation, prevents the onset of syphilis.

Although most of the experiments were made on apes, one highly successful one was made on a human being in the person of a young French doctor, M. Maisonneuve, who of course quite understood what he was about to undergo, and who deserves great praise for his courage. At the same time four monkeys were inoculated with the same virus. Two of them were untreated and showed the usual signs of syphilis, subsequently. Another was rubbed with calomel ointment twenty hours after inoculation, and it also developed syphilis. The fourth monkey and M. Maisonneuve were both rubbed with calomel ointment on the affected part for five minutes, one hour after inoculation, and neither of them presented any subsequent symptoms of the disease.

The practical application of these experiments to us as dental surgeons is given in the author's words as follows:

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"Dentists are liable to contract the disease in the exercise of their profession. It is indeed known that mercurial stomatitis appears oftener and with greater intensity among individuals who take little care of their mouth; as a rule these people are recommended, before commencing a course of mercurial treatment, to have their teeth attended to, to have any carious teeth extracted or filled, to have any tartar scraped away, and, in a word, to have all causes of secondary infection removed. In carrying out any of the above operations, a dental surgeon may easily sustain a slight wound or abrasion through a broken tooth, through which the virus can penetrate into the organism. Henceforth, whenever the examination of a sypilitic patient necessitates direct contact from which a wound results, nothing will be easier than to rub in calomel ointment at the spot where the virus may have entered."

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Prehistoric Tooth.—Whilst excavating near Ery-holme, in Cleveland, North Yorkshire, a monster prehistoric tooth weighing 21 lb. 9 oz. has been unearthed. The tooth is seven inches long and two inches and a half thick, and local archæologists are somewhat puzzled about it. The tooth is to be forwarded to Mr. T. Shepherd, of the Hall Museum, for his opinion.

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Registration in Sierra Leone.—An attempt is being made in Sierra Leone to pass an Act entailing registration by medical men, dentists, and chemists. It is meeting with a certain amount of opposition, which, so far as medical men are concerned, appears to be based upon the fact that the Act will give them no greater security against irregular competition by unqualified practitioners than the Act now in force in Great Britain and Ireland, and that it will subject them in their work to the jurisdiction of a body having the same powers as the General Medical Council, but formed of persons not deemed by the objectors to be sufficiently experienced or independent to wield such authority.

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ROBBERIES FROM DENTISTS.—At Bath Police Court, Reuben Davis, a dental surgeon, of 104, Acre Lane, Brixton, S.W., was charged on remand with stealing four pairs of forceps, value £4 15s., from a dental surgery in George Street, Bath, the property of Frederick Pidgeon. Prisoner pleaded guilty, and stated that he committed the theft when in an intoxicated state. It was reported by Chief Inspector Bence that while at Salisbury prisoner was sentenced to fourteen days for entering a dentist's house and stealing some silver plate. Upon his earnest plea for leniency, and an undertaking to sign the pledge, the magistrates cancelled the sentence and dealt with him under the Probation of Offenders Act. Prisoner had a wife and family, but owing to his intemperance they had come to a mutual agreement to live apart. Prisoner at one time had a good practice, but had allowed it to dwindle from bad to worse. The magistrates sentenced him to three months' imprisonment with hard labour.

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BARNSLEY EDUCATION COMMITTEE.—The School Management Committee recently considered a communication from the British Dental Association suggesting that the inspection of school children's teeth should be carried out by a fully qualified dentist, but the Committee did not recommend that any action be taken in the matter. The Chairman said the Committee felt that, in view of the recent appointment of medical inspection, they had sufficient advice.—Councillor Shine said he scarcely agreed with the Committee. The teeth were of great importance to the child's future health, and to ignore them would be to make the scheme of medical inspection incomplete. It was notorious that we were at present suffering more or less from deterioration—perhaps commencing in the head—and the Committee might well consider seriously the appointment of a dentist.—The Chairman pointed out that it was one of the duties of the medical men just appointed to examine the children's mouths.—The matter then dropped.

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# Abstracts of British & Foreign Journals.

## PARTIAL DENTURES.

By E. J. D. Perry, D.D.S., Chicago.

Probably no department of our work falls so far short of complete satisfaction as the supplying of teeth in partial sets. These cases are innumerable in variety ; in fact, almost every case is one by itself and unlike any other preceding one. It is plain, therefore, that no set rule can be laid down for their manufacture. No system can ever be universal in its application. Certain principles, however, must always be observed, because certain conditions are always present. Fixed bridges have but a small range of application, for the following reasons: The biting stress of the supplied teeth must be received by the abutments and piers, and if any number of teeth be supplied above two the abutments will sooner or later give way, especially if opposed by natural teeth. This is not taking into account the unsanitary features of a fixed bridge, which ever remain an unanswered objection. While the above statements are absolutely true, bridgework under its indication is an important factor in prosthesis, and he who cuts it all out is denying to his patients an invaluable service. By far the greater number of cases calling for the restoration of lost teeth, the remaining teeth or roots are not so located, or are not strong enough, to be available for a fixed bridge. In all of these cases the stress of mastication of the opposing teeth must be received by the alveolar ridge left by the lost teeth, and the remaining teeth and roots can only serve as a means of holding the piece in position. The difficulties in these cases are rendered greater because the alveolar ridges are cushion-like and yield under stress, while the teeth serving as stays do not. Therefore, a judicious division of the stress or pressure of mastication should be made between the alveolar ridge and the attachment roots or teeth. As no system can ever be absolutely universal in its application, one must make an exhaustive study of each case presented, and use the form of attachment or stay which seems to fill the largest number of the requirements in the case in hand. The most valuable service you can render a patient is in determining the right thing to do ; not alone in

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doing the thing right, but in doing the right thing right. A surgeon may be the most skilful in removing the appendix vermiformis ; yet he may make a beautiful operation, and be entirely successful ; yet if the appendix did not need removing, he is a failure. He did the thing right, but he failed because he did not do the right thing. Parenthetically, I fancy this is often the case.

Now, in all these cases of partial dentures we must be careful not only to do the thing right, but to do the right thing. This brings us to a consideration of a few individual cases, and as the different cases are shown on the screen, I wish to take up the indications for the use of the various methods.

I wish here to make a statement to the point that the operator and not the prosthetic man is the one qualified to do this work, or, stated conversely, the prosthetic man who is an operator is the man most nearly fitted to do this work. Often I have seen a mouth carrying beautiful operative work, and some lost teeth supplied with a cheap adhesion plate of rubber. The operator quit with the natural teeth. Now, he comes out into the larger field, and one of equal importance, and uses his skill and operative methods in supplying or restoring broken or part sets.

It matters but little in what classification the work may be placed, prosthetic or operative, or whether prosthesis has retrograded in the last thirty years. The fact in the matter is, the operator has widened his field of work, and extended it to what may be called, for want of a better name, operative prosthetics, and the purely prosthetic man and the purely operative dentist are both ineffective in the fullest sense in general dental practice. All these part-set schemes must be conceived in the operating room, though they may be born in the laboratory. The operative prosthetist, it seems to me, is the coming man. He makes the gold inlay ; he makes the gold and porcelain crown ; he makes the gold or porcelain bridge ; he makes the regulating apparatus, and later he will, if he has not done so in some measure already, lift prosthesis proper up out of the sloughs, and plant it upon the terra firma of artistic and mechanical excellence. The modern operator, therefore, must be a dental mechanic as well as a dental physician, an artisan as well as an artist. He must have both executive and creative skill. It is not possible or even profitable to draw comparisons between

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prosthesis thirty years ago and now. These past thirty years the whole face of our profession has changed. Thirty years ago not more than half a dozen men in the United States made or could make a continuous gum set. Now, hundreds of our best men do this work. Electric furnace is the answer. Men now graduating in our best schools can show carving, gold fillings and inlays that would bring a Webb or an Atkinson into amazement. Evolution! Growth!

Our profession has only kept pace with the evolution of our times. With an educated public come higher demands; with the higher demand comes the higher profit, and with the profit comes the development; for, say what you will, in the broadest sense the almighty dollar blazes the way, after all. If it were highly profitable to make dentures on vulcanite, the best men with the highest skill would make them, and it is gratifying that an educated public is demanding a higher art in this class of work, and our profession is rising to the public need. The public itself forces us to this higher plane. Our civilisation demands this or that, and gets it. I therefore say to you that I believe the percentage of higher art in prosthesis is increasing at a tremendous pace.—*Dental Review.*

## THE LEGAL LIABILITY OF THE ANÆSTHETIST.

CONSIDERABLE attention has recently been given to the subject of the administration of anæsthetics and the responsibility of the person administering them. The matter having been brought before the Medico-Legal Society by Dr. Freyberger, who contributed a paper on "Deaths under Anæsthetics," that society adjourned its discussion with a view to a more exhaustive debate upon the whole subject. When the discussion was resumed last week, Mr. Justice Walton, president of the society, being in the chair,

Mr. Henslowe Wellington read a paper on the legal liability of the anæsthetist. He said that there was nothing upon our Statute-book that prohibited any person who was not a qualified medical or dental practitioner from administering an anæsthetic or any other drug, but the practitioner, if unqualified, must not allow the public to believe that he was a qualified and registered medical or dental practitioner, otherwise he became answerable to the law for

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a fine not exceeding £20 for wilfully and falsely pretending to be a qualified practitioner. And "it seems that if a person, whether he be a regular practitioner or not, honestly and *bona fide* perform an operation, or use a dangerous instrument, which causes the patient's death, he is not guilty of manslaughter; but if he be guilty of criminal misconduct, arising from gross ignorance or criminal inattention, and not from a mere error of judgment, then he will be guilty of criminal misconduct, arising from gross ignorance or criminal inattention, and not from a mere error of judgment, then he will be guilty of manslaughter." (Archbold, Criminal Pleadings, Ed. 23, p. 787.) In the case of deaths under an anæsthetic, it must first be proved that they were due to the anæsthetic itself; and, secondly, to the want of reasonable skill, care, and attention on the part of the anæsthetist, and not due to any contributory cause on the part of the patient from an idiosyncrasy, or to his pathological condition at the time of the operation, or on the part of the operating surgeon; and how could one differentiate between these, or say that there was not a combination of them, as causes contributing to the death, and so exonerate every one concerned? If the anæsthetist was an unqualified practitioner and was engaged by the qualified operator, or if an unqualified operator engaged a qualified anæsthetist, then the qualified and registered man, surgeon, or dentist, was guilty of "covering," under the regulations of the General Medical Council, whether the patient lived through or died under the anæsthetic. It was very doubtful whether the dentist who had the L.D.S. without the full qualification of the physician or surgeon was qualified to give any anæsthetic at all, or whether he was not limited to the administration of nitrous oxide gas, and must call in a qualified surgeon to give the other anæsthetics; he was then in the same position as the unqualified man. If the anæsthetist was engaged by a surgeon to administer the anæsthetist, the surgeon was the servant of the patient, and agent to find a capable anæsthetist, and if both showed reasonable care, skill, and attention, neither of them was liable for *malpraxis*, whether the patient lived or died. Again, if the operating surgeon engaged an anæsthetist who gave an anæsthetic for an illegal operation, the anæsthetist, if ignorant of the illegality of the operation, could not be held liable, whether the patient survived or died. But if the anæsthetist knew the nature of the operation to be illegal,

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he was equally liable to answer with the surgeon for felony if she survived and for murder if she died. If the *causa causans* of the death was due to a pathological condition of the patient, unknown until the patient was upon the operating table, the death must of necessity be one of misadventure, or if due to a recognised pathological condition, and the patient or his representative had been warned of any risk and accepted that risk, the patient then accepted full responsibility and exonerated both the surgeon and the anæsthetist. Supposing that the anæsthetist saw danger from the anæsthetic after he had begun its administration, and withheld his hand, at the same time warning the operating surgeon that to proceed was dangerous, the *onus probandi* was perhaps thrown upon the surgeon if he proceeded with the operation, though it might be well-nigh impossible to finish it forthwith. But naturally the two men must work together and do their best for the life that was in their hands, and then no one could reasonably find fault or sustain any action at law for *malpraxis*. In conclusion, the reader of the paper said that the immediate cause of death attributable to the anæsthetic, *per se*, as a poison, must first be proved beyond any reasonable doubt, and then a further proof that the administrator of the anæsthetic or poison—and it mattered not whether he were a qualified or an unqualified practitioner—did not use reasonable care, skill, and attention must be shown before he could be made answerable to the law for damages or punishment. But the administration of any anæsthetic, whether for a local or a general anæsthesia, by unqualified practitioners—which was carried on to a very large extent throughout the kingdom—was a grave public danger, and should, perhaps, be made a penal offence by statute.

Dr. Frederick Hewitt moved the following resolution, which was seconded by Mr. Henslowe Wellington :—"That the two following resolutions be forwarded, in the name of the Medico-Legal Society, to the Privy Council and to the General Medical Council respectively :—'That, in view of the importance of the administration of anæsthetics, this society is of opinion that it is highly desirable, in the public interest, that every member of the medical profession, before he is registered, shall have received instruction in the administration of anæsthetics. It therefore earnestly begs the General Medical Council to consider whether they can see

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their way to include a course of instruction in anæsthetics amongst their "Requirements in regard to Professional Education." ' 'That, as the administration of any drug or drugs with the object of producing generalized insensibility to pain or actual unconsciousness for any medical or surgical operation, or during child-birth cannot be safely undertaken without medical knowledge and skill, your petitioners humbly pray that legislation be granted whereby the administration of any drug or drugs with either of the aforesaid objects by any person other than a duly registered medical practitioner or some one acting immediately under his supervision, direction, and instruction, be made a penal offence.' " He said that the public was protected against the indiscriminate sale of poisons, the adulteration of food, and many other risks, and it should be protected against the indiscriminate use of the most powerful drugs in the British Pharmacopœia, drugs which, though powerful were not capricious in their nature, and which might be controlled by scientific methods and made safe provided means were adopted for their proper and skilful administration. He thought all present would agree with him that it was impossible, considering the exigencies of modern surgery, for any one who had not had a medical training to decide what kind of anæsthetic should be given, and how the general arrangements for the safety of the patient should be made in order that he might pass safely through the artificial unconsciousness that was produced.

Sir Alfred Fripp supported the resolutions. He pointed out that something like 100 times the number of operations were now performed that were performed 40 or 50 years ago. Antiseptics and anæsthetics made it possible for these operations to be carried out, and so it came about that the surgery of the present day had higher aims than the surgery of the past. He strongly advocated the education of every medical student in the use of anæsthetics before he became qualified, and his re-education after he became qualified and before he took a professional appointment.

Dr. Probyn-Williams (President of the Society of Anæsthetists) criticized, as did several other of the speakers, Dr. Hewitt's description of anæsthetics as safe. He did not think he should use the word "safe." He thoroughly approved of the resolutions and hoped they might have the result Dr. Hewitt and every one desired.



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Mr. F. J. Smith thought that our medical students should be as well equipped in the matter of anæsthetics as they were in the administration of opium, strychnine and other drugs.

The discussion, in which the subject was discussed from many standpoiuts, was continued by Professor Glaister (of Glasgow ; Dr. F. J. Waldo, Dr. Templeman (of Dundee) ; Professor Harvey Littlejohn, Dr. J. Blumfeld, Dr. F. J. Silk, Dr. W. H. Willcox, Mr. Harvey Murphy, Mr. Schroder, Dr. Bellamy-Gardner, Mr. Hubert Sweeney, and the President.

Dr. Hewitt, in the course of his reply, said that he did not intend to say that any of these drugs could be considered as safe, though by careful education of the administrator it was possible to render them comparatively safe.

The first resolution was carried unanimously, and the second was carried by 16 votes to ten.—*Times*.

## THE INVENTOR, THE MAKER, AND THE SALESMAN.

We have received recently a claim for the establishment of what would, we conceive, be an ill-assorted union between surgery and commercialism the circumstances of which are worth a little attention. Proprietorship of medicines would be universally condemned by the medical profession, but the *Detroit Medical Journal* for November contains a correspondence between Dr. Roswell Park, of Buffalo, New York, and Mr. J. F. Hartz, President of the "American Surgical-Trade Association," in which both writers advocate the patenting by surgeons, of any improvements in instruments which they may effect ; and this proposal is supported by our contemporary in an article upon the subject, from which we beg respectfully to express our entire dissent. The plea urged is certainly a specious one and is to the effect that, in the absence of a patent, there is no security for the accurate carrying out of the design of the inventor or for the actual attainment of the advantages which the invention was intended to secure. It is sug-

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gested that there are instruments on the market, described as Kelly's catheters for the ureters, O'Dwyer's intubation tubes, or Murphy's buttons, which not only depart widely from the designs of those inventors but which could not be used for the accomplishment of their presumed purposes and would be liable to entail disaster upon patients as well as discredit upon the operators employing them. The force of this argument seems to us to be appreciably weakened by the fact that the name of Mr. J. F. Hartz, the trade president, who takes part in the correspondence, appears also on the face of our contemporary in the capacity of "business manager," so that he may reasonably be supposed to have exerted some influence upon the judgment of his editorial colleague. We do not know the state of the American instrument market, but the leading instrument makers of the United Kingdom are we do not hesitate to say, strictly careful with regard to the patterns of any instruments to which the name of an inventor is attached. If they were asked for Kelly's, or O'Dwyer's, or Murphy's instruments they would either supply them of correct pattern or they would frankly offer some departure from them of their own make, for which, in all probability, they would even claim some advantage. As a rule, a surgeon who designs a new instrument is materially aided by his instrument maker in perfecting his design; and we cannot but regard Mr. Hartz's claim as the expression of a desire on the part of the maker to monopolise a pattern to the usefulness of which he has contributed and thus to secure to himself or his firm the profits which may arise from its manufacture. Against this desire we have nothing to say, or at least should have nothing to say, if the instrument maker were himself the inventor. But it is trade and not surgery, and we do not believe it would be to the advantage of the profession to combine the two. As for the risks mentioned by Dr. Park and Mr. Hartz, they are, or ought to be, purely imaginary. A surgeon would scarcely buy an instrument until he knew how to use it and as soon as he possessed this knowledge he would see at a glance whether or not the instrument was calculated to fulfil the purpose for which it was professedly intended. The skill and knowledge of the purchaser should secure him against being supplied with an imperfect instrument, and if they were insufficient for this purpose

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they would certainly be equally insufficient either to secure the safety of the patient or to fulfil the requirements of the operation table.—*The Lancet.*

## A NEW METHOD OF CASTING GOLD INLAYS.

Dr. Carroll H. Frink, of Fernandina, Fla., in the *Dental Cosmos*, February, 1908, page 121, gives an original method of casting gold inlays requiring but little apparatus. He contends that all that is required to successfully cast a gold inlay is some means to overcome the tendency in a small mass of molten gold to assume a globular form. He first accurately adapts to the cavity a gold matrix through which, at some point deep in the cavity, s small hole has been made with a plate punch. Gum camphor is placed in the cavity on the top of the gold matrix, and burnished and carved to the form of the desired inlay; it and the matrix are then carefully removed. The apparatus consists of, first, a funnel-like arrangement through the stem of which is passed an instrument about the size and shape of a large toilet pin; on this the model is placed after the instrument has been passed through the stem, a sharp point of the instrument passing through the hole in the matrix. Then an investment frame of wire gauze is placed over it and filled with investment material. Before this has set, a funnel made of very thin metal is pressed into it, the top resting on the investment frame, and filled with investment; finally, a smooth conical piece of metal is placed within the funnel, its point resting on the model of the inlay; this forms the sprue and the crucible. When the investment has become quite hard, the sprue former and the thin metal funnel are removed and the camphor burned out, the block of investment which filled the funnel is removed from it, and after the sprue hole has been made clear, is placed in position in the investment. The pin-like instrument is removed and an air pump, or a large syringe, secured to the stem through which it passed. Sufficient gold is placed in the crucible, and when in a molten state the pump is operated, partially exhausting the air from the mould, and consequently causing a downward air pressure which forces the gold into the mould. It is claimed for this method that it produces a perfect casting with no risk of distorting or injuring the mould by excessive pressure.

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## RICHARDSON v. FREMLIN.

FORTUNATELY for the good reputation of medicine cases involving disputes over fees do not often come before public notice, and when they do it is almost invariably a question of a fair professional fee being disputed by the public, members of which too often consider that they have a right to value professional services at their own estimate. Unluckily, cases do occasionally arise in which the patient has been overcharged and a regrettable example of this has recently attracted much public attention. In the case of Richardson *v.* Fremlin, reported in the *Times* (on March 31st and two following days), the plaintiff, a dentist, claimed the sum of £570 3s., an amount alleged to be the sum agreed upon for professional services rendered to the defendant's wife. This large amount was made up of the sum of £389 11s. for 185½ half-hours' work for surgical and operative work, in addition to the sum of £180 12s. for mechanical work. The actual work done consisted of the restoration of the teeth of the upper jaw by means of a removable bar which the plaintiff claimed was a work of great and exceptional difficulty and could be done by no other dentist in England. It would appear from the evidence of Mr. Richardson that he explained to Mr. Fremlin his charges and the character of the work which he intended to do. As far as can be gathered from the report, the "bridge" was attached to the five roots, and on the preparation of these and the denture the plaintiff alleged that he had spent 185½ half-hours at 4 guineas an hour. The expert evidence for the defence showed that the work done by the plaintiff was such as could be done by any fairly competent practitioner and that a reasonable charge for the work would have been something between 75 and 100 guineas, and it was clearly brought out that the plaintiff had charged for preparing one tooth for the bar the sum of £65 12s. 6d. In summing up Mr. Justice Grantham stated that the question which the jury had to decide was whether there was a contract, and in his opinion there was some evidence of a contract. Assuming the contract to be for 2 guineas for every half hour, the question was whether that meant every half hour that the plaintiff could succeed in keeping the patient in the chair, or every half hour really taken up with work, and it was also a

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question for the jury whether all the half-hours were properly charged. The plaintiff had suggested that the time which he had had to devote to the patient had ruined his practice, but reference to his day book showed that this was not the case, and that on many occasions he had no other patients, and that he could, if necessary, have devoted twice the time to the patient. In reviewing the case we cannot help feeling that an excessive time was taken in preparing the work. But, granting that the time given by the plaintiff was not one minute less than that which was necessary for the proper treatment of the case, he would, we think, have been acting in a more satisfactory manner if he had given to Mr. Fremlin some more definite idea of the very large amount that would have to be paid for the operation. It seems also to be uncontradicted that in this case the plaintiff led his patient to believe that he was the only man in the whole of England capable of doing the class of work that was being done. Tactics of this sort undermine the confidence of the public in the professional man, and we were surprised to find a gentleman who holds a position on the representative board of the British dental Association giving evidence in support of the claims of the plaintiff. The jury returned a verdict for the plaintiff for £178 5s. in addition to £100 paid into court, and we do not think that many of Mr. Richardson's professional brethren will feel much sympathy with him in recovering some £300 less than his claim. We mention this because Mr. Richardson seemed to think that his action was in some way taken for the vindication of professional rights.—*Lancet.*

## ORTHODONTIA NOTES.

Cementing Clamp Bands.—By all means clamp bands on the molars should be cemented in place, even though they will hold in place without it. It is not easy to cement them at the first application, but much better to wait till they have been worn a few days, after which the bands may be easily slipped off and on the teeth. Remove the bands, dry thoroughly and line with soft medium setting cement. Dry the teeth *after* lining the bands, not before. By the time

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the teeth are dried the cement has adhered well to the bands. Place the expansion arch through the tubes on the buccal sides of the bands, and apply arch and bands all together. Draw the clamp bands up tight and the work is done, with one-tenth the time and trouble of cementing at the first application, as well as much better.

Twisting Ligatures.—Many operators try to draw wire ligatures tight by twisting with pliers. But very little tension can be obtained this way, as the ligature wire breaks before becoming tight enough to do any real pulling. The correct way is to use a long piece of ligature wire, say twelve or fifteen inches, sufficient to give a good firm grasp of the end by wrapping around the hand, and then draw tight over the expansion arch by pulling the hands hard apart. When sufficient pressure has been put on, the ends are twisted up several turns and the excess cut off, leaving an end about one-eighth of an inch long. This end is tucked down alongside the arch with a broad foot plugger, preferably on the cervical side.

Space Between Arch and Teeth.—It is a mistake to have a wide space between the expansion arch and the teeth. This makes the lips unduly prominent and makes ligatures very liable to slip off. The arch should be bent to lay rather closely to the teeth, allowing only space enough to permit a few weeks' movement of the teeth. When the teeth have been drawn outward against the arch wire, remove the same and bend upon a greater circle, giving more space again. The greatest space should be in the bicuspid region, amounting there to about one-eighth inch on each side.

Ligature Wire.—Wire for ligatures should be soft and very tough. Spring wire of any kind is worse than useless. Annealed brass wire is best; German silver is too harsh; copper, silver, gold, and platinum are not tenacious, and would require entirely too heavy wire. No. 32 gauge (or thirteen thousandths of an inch) is a very suitable size for general work. No. 30 gauge (or fifteen thousandths) is used for heavy work.

Both Dental Arches Involved.—In any irregularity, both upper and lower are equally affected, hence both need treatment. It is work worse than wasted to correct one arch only and let the other go.

Models of Cases a Necessity.—Sometimes dentists begin orthodontia cases without a proper set of models. This is

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decided unwisdom. A good set of models at the very beginning is not only "nice to have," but is a direct necessity. The progress of a case cannot be properly judged without it.

Pouring Models.—There need not be *a single bubble* in a model if handled right. And there is no mystery about pouring the plaster, either. The plaster should be evenly and quickly sifted into the water, and the excess water drained off. Just as soon as the last particle of plaster is saturated with water, it is ready; just as ready as if stirred and beaten and whipped—in fact, in a much better condition. A small quantity should be placed well up on the sides of the impression and jarred down, causing a thin film of plaster to flow over the side of each tooth-depression existing in the impression. The film finally reaches the occlusal surface, when it flows down the side of each cusp-depression and fills the same. More plaster is added and jarred down, till finally the film completely fills each tooth depression, gently lifting the air up out of the way, and making a model entirely free from bubbles.

Photographs of Patients.—The facial expression is always more or less changed through orthodontia treatment, and a record of this change should be preserved by means of photographs. Two, if not three views should be taken; a full profile, a straight front, and also a three-quarter profile. This latter usually gives the best likeness, but does not tell all the story wanted, and which requires the other views. Some few patients object to these photographs, but most are sensible and make no objection to any legitimate use thereof.

The Youngsters.—The majority of general practitioners who essay regulating, usually store up trouble for themselves by taking the older patients—from seventeen to twenty five—and passing by the youngsters of eight to twelve whose cases they might easily and successfully treat. After thirteen, the difficulty increases as the square of the distance. Put your energies into the small cases and succeed.

Contracted Arches.—Ninety-five per cent. of orthodontia cases require expansion of the dental arch. Contraction of the arch is seldom necessary.

Crowns, Bridges, and Contour Fillings.—Not all orthodontia treatment is given through regulating appliances; crown and bridgework is often an important feature required

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in correcting a malocclusion. Likewise, fully contoured fillings are often a requisite to restoring and maintaining a correct occlusion.—*Western Dental Journal.*

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## THOUGHTS ON DENTISTRY.

The *Evening Standard* contains the following: "During the past twelve months upwards of fifty thousand operations under anæsthetics were performed at the Royal Dental Hospital, a letter from that institution informs the world. As the perils of anæsthesia have been so much under discussion this month it would be of advantage to have more information from such a list as this. New anæsthetics are constantly being announced, so that you may take your choice between gases of various names—chloroform, electric light, and the spirit of Epsom salts! But it is left for the layman to find out for himself which is best. A new one was tried last week for the extraction of a couple of teeth of a little girl. All she felt was the tiny prick of the syringe, and the teeth were drawn without a shadow of pain, and without any subsequent bleeding. The same compound had been used the previous day for the benefit of a bed-ridden man who for years has suffered from the worst form of heart disease. A doctor felt his pulse while the tooth was extracted. The patient felt not the slightest twinge of pain, and there was not the least variation in his pulse.

"Our masters of dentistry ought to award certificates for diplomacy, as well as for skill in operations. Some say too much, some say not enough. There should be a special purgatory for the man who, after filling his patients mouth with rolls of wadding and so forth, preparatory to 'stopping' a tooth, begins a conversation in which occurs a string of interrogatories needing immediate answer. Another punishment should be designed for the dentist who unhandily removes those waddings which, having by this time adhered to the cheek and gum, bring away the skin of both as the dentist withdraws them. The true diplomatist in operating on a child would utter a word of warning. The child already mentioned suffered one spasm of fear. Some of the composition escaped into her mouth. It tasted salt, and she

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shuddered. 'I wanted to be brave, or I should have cried,' she afterwards explained. 'When I tasted the salt I thought it was blood, and it made me think I should die.' A word of explanation in advance would save a child's mind untold horrors.

"The German savant who is experimenting with a view to ascertaining the duration of dreams might get some useful information from patients who have passed the dentist's chair. One of them not long ago sat down, took gas, and dreamed for all he was worth. He saw himself finish his work, go to his club, leave for the station, run for the train, and miss it. He returned to his club and lay down on a settee in the library. There he passed a miserable, restless night, getting gradually colder and colder as the fire died down, and with a pain gradually growing about his head and face from the hardness of his couch. Five o'clock in the morning came, and the steward roused him to say that the club must now be closed. The sleeper got up feeling very seedy and stiff—to find that the steward was his dentist, and that the night's adventures had lasted exactly two-and-forty seconds."

## A PATIENT'S GROWL.

A CORRESPONDENT to *Truth* who has more than once described in those columns his sufferings at the hands of dentists, sends the following *apropôs* of the recent action over a dentist's bill:—

Like Mr. Justice Grantham I have had much personal experience of dentists. About eight or nine years ago a friend in the course of conversation strongly recommended me to have all my teeth drawn and replaced by artificial ones, assuring me that this would make me a happy man, as it had him. I had a few good teeth, but a good many others which were a perpetual nuisance, so I decided to act upon this advice, and betook myself to an eminent dentist. He said he could draw all my teeth in two sittings, and at the first we settled to draw the upper ones. An expert in laughing-gas was called in, who explained that he had invented something in connection with the gas that prolonged its effects. The teeth were drawn, but

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the invention was not a success, for although I could make no movement I could feel each tooth being drawn as though I had taken no anæsthetic. The lower teeth was drawn more successfully with the ordinary method of administering gas, for I felt nothing. The gums, the dentist said, would alter their shape, and a temporary plate was therefore made, to be succeeded by a permanent one. The temporary one was a failure. So was the permanent one. Since then I have spent each year about the price of the upkeep of an automobile on plates, but never yet have got one that I could wear, although I have tried dentists at home and abroad. The price of each plate has varied from £30 to £50.

The mode of procedure is this : My mouth is filled with plaster in order to take the mould of my gums. The plate is made from this. Some of the plates do not remain fixed by suction, but fall out. All of them hurt when I bite. The dentist says that in the end the plate will hold fast but it never does. Where they hurt, he scrapes them. The scraping does not effect its purpose. Either the pressure continues, or it is transferred to some other place. The dentist says that this is quite remarkable (and I suppose some people do get a plate that fits). He tells me to come again. I do, and again he scrapes. In the end I get tired of coming, pay my bill, and try another dentist. The result is the same. One eminent dentist suggested bridge work for the lower jaw, as two teeth had been left after being crowned. The bridge seemed to work well, and I started for Homburg to take the water there with it in my mouth. The bridge, however, produced ulceration, and as I was told that the consequences might be serious if I did not have it taken out, I had it taken out. This bridge cost me £150.

I have come to the conclusion that while there may be dentists who understand drawing out and stopping teeth, they know very little of the making of plates. I have occasionally suggested this to them. Some have practically admitted it, but have told me that plate-making is their most remunerative business. They have, they say, " worked at the bench," and passed some sort of examination, but it is pretty clear that they are not experts, or very skilled in this branch of their trade. As a matter of fact, however, they do not make the plates. They take the mould, and then hand it over to a skilled workman—which I could do myself just as well. The skilled workman makes the plate, but it seems to

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be a matter of chance whether it fits or not. If it does not, they scrape and tinker at it in a blind sort of way, without producing any material result.

Now what is the real cost of the plate? It takes about a day and a half to make one. The best workmen do not get more than £4 a week. The maker will, therefore, get about £1 for his time and skill. The materials do not cost above £1. On a liberal estimate the plate, therefore, costs the dentist £2. If he charges £30, his profit is £28. I have in a friendly way pointed out this to dentists. They reply that the £28 is for their skill. I have been too civil to answer that this is far too much, but I cannot see that a high degree of skill is required to fill a patient's mouth with plaster, let it harden, and then pull it out. Even if we include the scraping and the tinkering in the attempt to convert a bad job into a good one, the dentist's price is excessive. Bridge work I admit does require a considerable amount of skill, but of what service is a bridge that has to be pulled out? No more than a bridge over a river that precipitates the passenger into the river.

I would suggest that when a dentist is consulted he should be paid for his advice, and for pulling out or stopping teeth, but that when a plate has to be made, the patient should be turned over to a surgical instrument maker. The dentist might receive his guinea, or even his two guineas, and if the surgical instrument maker were to get £3 when he has made a plate that can be worn, he would have no reason to complain. A physician does not make the surgical appliance that he recommends; then why a dentist? And if the dentist professes to make the appliance, why should he charge five or ten times the fair price for it, and generally expect to be paid whether it can be worn or not? And why should he charge by time rather than by the job, seeing the result is, as Mr. Justice Grantham justly observed, that the more he boggles his work and the more he worries and tortures his patients the higher he is paid.

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# ARRANGEMENT AND OCCLUSION OF ARTIFICIAL TEETH.

By J. H. Prothero, D.D.S., Chicago, Illinois.

Studies of the movements of the mandible in mastication have established certain facts that are of vital importance to the prosthetist in the construction of artificial dentures. Many in the profession to-day are familiar with these facts, but fail to profit by or put them to practical use. Others, again, have given this subject but little consideration, principally because its importance and value have never been impressed upon their minds.

Bonwill laboured long and earnestly with the profession in encouraging the study of normal occlusion of the natural teeth, and urging the necessity of following nature's methods in the arrangement of artificial teeth. He was a pioneer in this field, and practically worked alone without the sympathy or assistance of any one for many years; therefore, it is not strange that he should have failed to complete the system in all of its details, nor is it strange that he made some erroneous deductions. The bulk of his work, however, stands as a monument to his memory, which compensates in a small degree for the lack of appreciation of his efforts by the profession while he was living.

I have brought with me a skull in which the full complement of the teeth is present, and which I hope to exhibit at your clinic. One need but to glance at it to appreciate the beauty and utility of arrangement of the organs of mastication. A close study of this particular specimen will I am sure inspire in the minds of those who examine it a desire for greater light, and prove an incentive to higher, larger and broader efforts in the field of prosthesis. From its examination one can also readily understand why Bonwill, who examined thousands of such specimens in his research work, became the enthusiast that he was.

Within the last decade a few men have taken up the work where Bonwill laid it down, with the result that more accurate occluding frames have been devised, appliances for recording the normal movement of the mandible have been invented, and new terms and expressive phrases have been introduced for simplifying the study and carrying out more accurately the practical details of this subject.

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The lower jaw, on account of its peculiar attachment to the base of the cranium, and of the direction traversed by the muscles controlling it, is capable of a great variety of movements. Mastication, however, is accomplished by the jaw movements being carried out along certain definite lines. There is no haphazard "catch-as-catch-can" condition prevailing. Every movement is for a purpose and is carried out with almost mathematical precision.

### Movements of the Lower Jaw in Mastication.

The facts I wish to present will be rendered clearer by giving a brief description of the movements of the lower jaw in the act of masticating food on one side of the mouth. We will suppose the food has been introduced into the mouth and carried between the upper and lower teeth on the left side by the tongue. The right side of the mandible is then drawn forward and downward a short distance, the condyle passing on to the eminentia articularis, and following what is known as the "condyle path," while the other condyle is slightly rotated, but remains practically at rest in the glenoid fossa, thus becoming the pivotal point around which the mandible rotates. This movement brings the marginal ridges of the buccal cusps of the lower bicuspids and molars on the pivotal or working side of the mouth, in alignment with the buccal cusps and marginal ridges of the corresponding upper teeth, while their lingual marginal ridges occupy a similar relation to the corresponding upper teeth and surfaces. The distance traversed by the buccal marginal ridges of the lower teeth in passing from normal occlusion to the central grooves to the buccal marginal ridges of the uppers in partial occlusion is most expressively termed the "differential" by Dr. T. W. Pritchett.

This differential movement brings the teeth in such relation as to form a long rectangular groove extending from the third molars to the first bicuspids, into which the food is forced and prevented from lateral displacement by the tongue and cheek muscles. On the opposite or projected side the buccal cusps of the lower third molar engage with the lingual cusps of the upper second or third molar, and sometimes both, depending upon the mesio-distal relationship of the teeth in the two arches. Anterior to this contact, the other molars and bicuspids are not in occlusion, and consequently are not in correct relation to masticate food. The lower incisors are

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usually in contact with the upper incisors between the central and cuspid on the working side of the mouth.

It will therefore be seen that contact of the lower with the upper teeth is secured at three widely divergent points, triangularly located, and hence the term, three-point contact, has been applied to both natural teeth and artificial substitutes exhibiting such contact. This term expresses a condition that should be present in either natural or artificial dentures in order to insure the most effective results in mastication, and prevent the tipping of dentures and the jaw under stress. Under normal conditions, the simple opening and closing, or hinge-like movement, is only employed when lateral motion is not possible, or when food of the softest variety is being triturated and is not nearly so effective as the lateral movement.

When the upper anterior teeth over-bite the lowers, the bicuspids and molars are arranged so that their general occlusal surfaces present a curved line, with convexity downward, more or less prominent, depending on the depth of over-bite. This line if projected backward passes just anterior to or through the condyle. The centre of this curve lies in the region of the upper anterior margin of the orbit under normal conditions, and correspondingly higher as the arrangement approaches a plane. This curve has been called the "compensating curve," or "curve of Spee," so named from the man who first described it. The inclination downward and forward of the condyle path coincides with this curve and varies from a horizontal plane to an angle of 45 degrees, the average being about 25 degrees.

Occasionally in the same individual there is a difference in the angles of inclination taken by each condyle. This curved arrangement is a provision of nature to preserve contact of the teeth at various points in the arches, by compensating for the dropping down of the condylar processes as they move forward on the eminentia articularis. The lower third molars, which are placed in a higher position in the curve, when brought forward come in contact with the upper second molars, which are placed correspondingly lower. At the same time the incisal edges of the lower anterior teeth are carried downward and forward, and usually come in contact with the corresponding upper teeth and surfaces, although contact in this location is not an absolute necessity, thus equalising the force exerted by the muscles

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of mastication, and enabling them to exert their maximum effort.

Many other interesting and important facts relating to normal occlusion and mastication might appropriately be mentioned in an essay of this character, but time forbids.

## Details to be Observed in Arranging Artificial Teeth.

An effort will now be made to describe a few of the many important details to be observed in arranging artificial teeth as near to nature's methods as possible.

The mission of the prothetist in replacing the lost natural teeth by artificial means is two-fold: first, to restore the function of mastication, and second to meet æsthetic requirements. In order to arrange and occlude artificial teeth correctly an occluding frame must be used which is capable of reproducing the masticatory movements of the human jaw. A number of good appliances fulfilling such requirements more or less accurately are now procurable, some of which are decided improvements on the Bonwill. The second adjunct is an appliance for measuring the relation of the alveolar planes to the condyles, while the bite plates are in position in the mouth and of sustaining them in this relation to the hinge of the occluding frame while the models are being fixed. The face bow fulfills these requirements efficiently. Some means of registering the inclination of the condyle path is also necessary. A method outlined by Christiansen and an appliance suggested by Dr. Snow can be applied with fairly satisfactory results for accomplishing this step.

The proper appliances at hand, the steps of construction of a full upper and lower denture are as follows:

The models having been secured, a rigid unyielding base-plate is conformed to each and trimmed to correct peripheral outline. Borders of wax are built up to correspond in length to the natural teeth and absorbed tissue. This can only be done approximately at this time. The wax rims should be trimmed nearly flat occlusally, the outer buccal margins of the lower being slightly higher than the lingual to correspond with the bucco-lingual inclination of the occlusal surfaces of the teeth, while the upper rims are trimmed correspondingly. The labial and buccal surfaces of the wax rims should be built out to represent such restoration as may be deemed

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necessary. When this has been accomplished the base-plates are introduced into the mouth. The length of the upper rim of wax is determined by the length and position of the lip and should show about 1½ millimeters below the lip when the latter is at rest and facial contour restored. The length or height of the lower wax rim is determined after the length of the upper rim has been secured by noting the position of the lower lip when closed, and the external orbicular contour. Too long a rim is indicated by the effort on the part of the patient necessary to obtain contact of the lower with the upper lip. A rim deficient in height is indicated by the lower lip being crowded down and consequently shortened, resulting in a disturbance of the general facial contour.

If absorption of tissue in both upper and lower arch has been uniform, the line of contact of the two rims should be about midway between the upper and lower borders. Where but slight absorption has occurred the wax rims will represent a thickness but little greater than the length of the crowns of the natural teeth. The facial contour should be noted and wax added to or trimmed from the rims as æsthetic conditions indicate. Usually, it is necessary to build out the cuspid eminence to a considerable extent in order to obliterate the wrinkle which extends from the alae of the nose over the angle of the mouth in those cases where loss of tissue is marked.

Care should be taken to see that uniform contact of the wax rims throughout is secured while the base-plates rest solidly upon their respective borders. This is tested by having the patient close the mouth firmly ; then, with a thin, flat instrument inserted between the rims in the region of the second bicuspid or first molar, attempt to pry them apart. If they do not yield at this point, repeat the step on the opposite side.

Should the base-plates separate on either side, the other side remaining in contact, or on both sides while contact is maintained in the anterior portion, more wax should be added to the deficient rim until uniform contact is secured anteriorly and on both sides at the same time. Failure to correct this error would result in the teeth on the deficient side failing to occlude.

The high lip line should be marked, which will give some idea as to the length of the tooth to use to avoid the exposure



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of a large area of artificial gum material, and yet allow a reasonable amount to show in laughing. The median line should be marked on the base-plates at this time. One of the best methods of doing this is to place a straight edge along the median line of the face, striking an average between the point of the chin, the philtrum, and a point midway between the inner termination of the eye-brows. The result will be harmonious, and as a general rule more accurate than if the frenum labiae is taken as a guide.

The upper base-plate is now removed and the stem of the face-bow heated and forced into the wax rim two or three millimeters from the incisal plane. Having been forced deeply into the wax, it can be removed to facilitate the carrying out of subsequent steps and replaced in position later when the base-plate is in situ.

The next step is to secure the correct or normal relation of the lower to the upper jaw. The method about to be described has been followed by the writer for a number of years with uniformly accurate results.

### Method of Securing Correct Relation of Upper and Lower Jaw.

Both base-plates being in position, the patient is instructed to relax the muscles of the jaw so that the operator may open and close the mandible at will. The tips of the fingers are then placed on the point of the chin, moderate but not excessive pressure upward and backward exerted, and the mouth opened and closed several times, pressure as indicated being maintained at all times. The fingers of the other hand are employed to hold the lips apart and careful attention given to the striking of the wax rims together. It will frequently be noticed that they do not at first strike uniformly in the same place, but after a number of trials with maintained pressure on the point of the chin, the correct position will be found. Excessive pressure on the chin will compress the tissues in the glenoid fossa and result in backward displacement of the mandible.

When the normal closure is established, the base-plates being in contact and pressure being still exerted on the chin, the patient is instructed to "keep the lower jaw closed." This is readily done without any tendency to disturb the secured relation. Two four-pointed staples should be at hand which can now be forced into the wax rims to hold the base-plates

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firmly together. The stem of the face bow is now inserted into the upper base-plate in the opening previously made for it, care being taken to see that it is firmly imbedded in the wax and immovable. The face bow is then placed in position, the centre clamp passing over the stem projecting from the base-plate, and the side rods carried to a point about 12 mm. in front of the external opening of the ears, and on a horizontal plane with it. They are then pressed firmly against the sides of the face and the clamp nuts tightened. Care should be taken to see that the face bow is evenly balanced before tightening the clamp nuts. This can be done by slipping the bow sideways on the rods, as indications require, until the same number of graduations show on each rod between the face bow and face.

The clamp nut on the stem is next tightened firmly, when the base-plates are ready for removal. This is accomplished by loosening the side clamp nuts and drawing out the rods. The patient is then instructed to open the mouth and the base-plates are removed by grasping the rods attached to the upper plate. Reasonable care should be observed to prevent the relationship of the two base-plates and that of the face bow with the upper plate from being disturbed.

### Mounting the Models.

Mounting the models on the occluding frame is the next step. The side rods of the face bow are pushed inward to their limit, and the clamp nuts tightened, This brings their inner ends, in which there is a slight depression, in proper relation to receive the projecting lugs of the frame hinge. The upper bow of the frame is thrown open, the face bow adjusted in position, the upper model placed in position in its base-plate, and the bow dropped back to position again. It might be well to secure the model to the base-plate with a little hot wax to insure stability while being attached to the frame. Plaster is now mixed and applied to the model, and around the bow as usual, to hold it in place.

The entire frame, with face bow, base-plates and upper model, is now inverted, the lower bow of the frame thrown back, the lower model placed in position in its base-plate, and the bow dropped down upon it, and the model attached as usual. When the plaster has firmly set, the face bow can be removed from the frame and base-plates.

The models now occupy such a position upon the occlud-

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ing frame that their occlusal planes bear the same relation to the hinge that the natural alveolar planes bear to the condyles. This relation is not procurable in any other way known to the writer than by means of the face bow mentioned.

### Registering the Inclination of the Condyle Path.

One other step of importance remains to be carried out before proceeding to arrange the teeth. This consists in registering the inclination of the condyle path and setting the hinge slot of the occluding frame at a corresponding inclination. The staples are removed from the base-plates and on either side of the lower base-plate on the occlusal surface, near the distal termination, is placed a small U-shaped appliance having a projecting tapering pin. The "U" portion is pressed into the wax, leaving the pin projecting above the occlusal plane.

The base-plates are now inserted in the mouth and the patient instructed to project the jaw forward and then return it to normal position. This may be done a number of times before final attachment of the two plates, to insure against lateral motion. When the patient can move the mandible evenly forward, he is instructed to close while the jaw is projected. The base-plates, instead of being in normal position, will usually be separated at their distal extremity, relation being maintained by the projecting pins, which have passed upward into the opposite base-plate. The lower plate will also be considerably advanced beyond the upper. The incisal rims of wax, however, should be in contact.

On removal, the base-plates are returned to the lower model on the frame, the hubs of the hinge slots released, and the spring controlling the lateral movement of the frame thrown off its attachment. This releases the upper portion of the frame so that the upper model can be moved up or down, forward, backward or sideways without restriction. It may now be placed in the upper base-plate, and its correct position found. This adjustment, it will be found, will cause the hinge slots to assume approximately the same angle or inclination or the condyle path, in which position they are permanently fixed by tightening their respective clamp nuts. The base-plates are separated, the U-shaped appliances removed, and the hinge spring thrown into action, which brings the base-plates back to their original relation as when first mounted on the frame. As before stated, however, when

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lateral motion is produced, the lower bow of the frame is carried downward and forward at approximately the same inclination as that of the natural jaw.

The frame should now be subjected to the lateral motion and the occlusal planes of the wax rims modified so as to remain in contact in the lateral motion, as well as in normal occlusion. This modification, it will be found, will usually necessitate the curving upward of the occlusal planes, the amount of curvature depending on the angular inclination of the condyle path.

### Selection and Grinding of Teeth.

Teeth of good form appropriate to the requirements of the patient should be selected. The molars and bicuspids should be as nearly normal in their bucco-lingual diameter as is possible, to secure a good working differential in mastication.

The principal object in the grinding of teeth, and which should never be lost sight of is to so modify their occlusal forms as to increase the contact area of those surfaces involved in mastication to the greatest possible extent. In other words, it is the developing of surfaces from what would otherwise be mere contact points in the teeth as supplied by the manufacturers.

With a little experience and skill, the development of correct occlusal areas on bicuspids and molars can be accomplished without marring appreciably their general outline form, thus rendering them capable of food reduction with minimum effort.

As a general rule, the central groove should be deepened somewhat and broadened materially. This treatment not only reduces the mesial and distal marginal ridges, which usually are too prominent, but it reduces the lingual inclination of the buccal and the buccal inclination of the lingual cusps, which are too rounded and tubercular in form, to broad planes so necessary for accomplishing the desired results.

The modifications just mentioned may be made before beginning the arrangement of the teeth, and when properly carried out the teeth will need only occasional touches here and there in the final adjustment. These preliminary steps having been carried out, the teeth are ready for arrangement.

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### Arrangement of the Teeth.

Since the facial contour was restored by carving the labial and buccal surfaces of the wax rims, the teeth should be arranged progressively in such a manner as to take their proper alignment without destroying any more of the contoured surfaces than is necessary. A section of wax adjoining the median line on the upper base-plate is removed from the rim, of sufficient length and depth to admit one of the central incisors. This is placed in proper alignment labially and incisally, and firmly attached by melting the wax lingually. Another section large enough to admit the adjoining lateral is then removed and this tooth dropped into position, the tooth already fixed and the adjoining margin of the wax to the distal serving as a guide in securing the correct labial alignment. The cuspid, and then the three opposite anterior teeth, are similarly adjusted, then the bicuspids and molars, the occlusal surfaces of which are arranged to correspond to the compensating curve previously developed in the wax rims.

Two methods are in vogue for arranging the lower teeth. First, the second bicuspids are set in position to occlude with their opposite fellows, the teeth anteriorly and posteriorly being arranged from this fixed point.

The second method, and the one recommended by the writer is to arrange the six anterior teeth first, allowing the upper incisors to overbite the lowers slightly, and when the first bicuspid is reached, correct the disproportion in width as far as possible between the uppers and lowers by grinding the proximating surfaces of the cuspid and bicuspid. This method usually requires less modification of the anterior teeth than the one first mentioned. As a rule, disproportion in the relative mesio-distal diameters of the lower bicuspids and molars, compared with the uppers, nearly always exists. In such cases the larger teeth should always be reduced by grinding on their mesial or distal surfaces or exchanged for a set of proper proportion, which, however, can be seldom done with exactness. The mesial and distal planes of the various cusps are modified as conditions require, so as to secure positive contact with the corresponding planes of the opposing teeth.

Beginning with the placing of the first lower tooth, the frame should be moved from side to side to test the correctness of the position of each tooth placed, and modified, or its opponent modified, as conditions require. Further remarks along this line are unnecessary. To those who have never at-

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tempted a case of anatomical occlusion, I can say that if you will undertake one with a careful determination to succeed you will learn more from that one case than can be derived from a paper ten times more explicit than this.

As one gains experience, enthusiasm grows, and a class of procedure shunned by some and a bugbear to many more because of unsatisfactory results, becomes a pleasure.

Let me quote a paragraph from an unpublished paper by Dr. T. W. Pritchett, to whom I owe much for many hints in this field. "There it a fascination in the thought when edentuless persons, helpless as to the function their lost organs perform, present for our service, we can, in a measure, by our art restore the lost function and make them presentable to their friends again. The romance comes in when we succeed beyond our and their expectations."

My friend Pritchett succeeds and so do many more whom I could name, and so can every one who makes the effort. It is the only way. Get into the front rank and help the work along by doing it yourself and helping the other fellow. If all would put their shoulder to the wheel and follow nature's methods, the plain line articulator and barn door hinge would be relegated to the scrap heap, where they should have been cast years ago.—*Dental Summary.*

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THE SMITH TURNER SCHOLARSHIP AWARD.—The first examination for the Scholarship in Dental Mechanics, founded as a memorial to the memory of Mr. James Smith Turner, was held at the Royal Dental Hospital, on April 8th. The Scholarship has been awarded to Mr. Wilfred Woolfe Miron, of 8, Grove Place, Swansea, who, we believe, has elected to join the National Dental Hospital.

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IN the course of an inquest in Lambeth on the body of a man named Austin, the widow stated that her husband had a tooth out some time ago and the dentist cut his tongue. In consequence of this he had to have half his tongue cut away by operation, and had since been in bad health. Death was due to heart trouble, and the jury returned a verdict accordingly.

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# Dental News.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

*The following were the questions in the written portions of the recent Examinations for the Diploma in Dental Surgery.*

### First Professional Examination.

### Dental Metallurgy.

11 A.M. to 1 P.M.

N.B.—The Candidate is required to answer *three* questions and not more than *three*.

1. Given a bar of pure gold, how would you prepare plate for dental purposes?

2. What properties are required in Dies and Counter Dies? What metals and alloys are commonly used for this purpose in the dental laboratory?

3. What is the effect of the presence of Platinum in Dental Amalgams and Dental Alloy? How can the metal be detected in the former, and its quantity estimated in the latter?

4. Describe the process of the recovery of Gold from "Sweep" or Lemel.

### Anatomy, Physiology, and Surgery.

2 to 4 o'clock P.M.

N.B.—The Candidate is required to answer *four* questions, and not more than *four*: of these, *one* at least must be in each subject.

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### Anatomy.

1. Give the attachments and relations of the Temporal Muscle.

2. Describe the course and distribution of the Second Division of the Fifth Nerve.

### Physiology.

3. What varieties of Epithelium are found in the Human Body? Discuss the uses of Epithelium. Illustrate your answer by examples.

4. Describe the structure, nerve-supply, and function of the Iris.

### Surgery and Pathology.

5. Describe the clinical characters of Epithelioma of the Tongue. From what conditions must it be differentiated?

6. Mention the foreign bodies most often impacted in the Œsophagus; state the possible consequences of this accident and give your treatment.

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## Dental Anatomy and Physiology and Dental Surgery.

5 to 8 o'clock P.M.

N.B.—The Candidate is required to answer *two* questions in each subject and no more.

### Dental Anatomy and Physiology.

1. What do you consider to be Man's proper diet? How can you maintain your opinion by a consideration of human and other Jaws and Teeth?

2. In the speaking voice what uses are made of the Teeth, Tongue, Palate, and Lips?

3. Describe the origin and structure of the Enamel Cuticle (Nasmyth's Membrane). How would you demonstrate this tissue microscopically?

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### Dental Surgery and Pathology.

4. Describe in detail a method of using a local anæsthetic by injection for the extraction of a tooth. What dangers may occur and how would you endeavour to prevent or counteract them?

5. What do you understand by the terms Phagocytosis and the Opsonic Index? How would you make a cultivation of micro-organisms from a case of Pyorrhœa Alveolaris?

6. How do you account for the liability to caries of the first permanent molar? What importance do you attach to the retention of this tooth in the denture?

## Legal.

### CONTRAVENTION OF DENTISTS' ACT.

In the Summary Court, County Buildings, Glasgow, Sheriff Scott Moncrieff presiding, James Wilkinson, alias Duckworth Wilkinson, alias J. D. Wilkinson, residing or carrying on business at 464, Paisley Road West, Govan, was convicted of having contravened the Dentists' Act, in so far as not being registered under the Act, and not being a legally qualified medical practitioner, he displayed a sign-board on his premises with the words "Dr. Wilkinson, registered surgeon dentist, Brisbane, Q.A." He was fined £10 and £3 expenses to the complainer, Mr. Norman G. Bennett, hon. secretary of the British Dental Association.

The defendant has sent the following letter to the *Glasgow Evening News:*

"I should like to draw attention to a paragraph which recently appeared in many daily and weekly papers stating that at a sitting of the Summary Court, Glasgow, I was fined £10 and costs for having exhibited at my premises a sign-board bearing the words "Dr. Wilkinson, Registered Surgeon Dentist." I think it only fair to state that the words on my sign-board were :—" Dr. Wilkinson, Registered Surgeon Dentist, Brisbane, Q.A., and had a correct report of the

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proceedings been given, a good deal of misconception would not have arisen. In the absence, however, of such a report, I should like to bring before the public, through the medium of your valuable paper, a statement of the facts of my position.

In 1880 I commenced practice in Liverpool, and in 1881 applied to the British Medical Council for registration, but was informed that the register was then closed; but notwithstanding this fact, I have been informed that over two hundred dentists have since been registered under the Dentists' Act of 1878, without qualification. On being refused registration I left England and went to Queensland, Australia, where I practised until 1892. I then returned to this country, stayed some time, and thereafter went out again to Queensland. In the year 1902 the Dental Act of Queensland was passed, and having the necessary qualifications, *i.e.*, two years' practice there—I was registered as a dentist under it, and obtained a certificate of registration. Now, all dentists registered at the time of the passing of the British Act in 1878 were placed on the Register by paying a small fee and without having any qualification whatever; whereas dentists registered under the Queensland Act of 1902 required to be in practice for a period of over two years before the passing of the Queensland Act; and therefore, while it has been held that I am not entitled to put out a sign with the qualification I hold, it is to all intents and purposes a better qualification than the majority of dentists who were registered under the British Act of 1878 possessed at the time of their registration. It is a strange law surely which prevents a man from exhibiting on his sign-board a qualification which he holds."

## ACTION AGAINST A LYMINGTON DENTIST.

An action was recently heard at the Lymington County Court, before Judge Philbrick, K.C., in which Thomas Wm. Russell, an outfitter's assistant, of Lymington, sued Dr. R. Wentworth White, dental surgeon, of Lymington, for £50, damages alleged to have been caused by the negligent manner in which the defendant extracted a tooth or teeth

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of the plaintiff's, and expenses, loss incurred, and pain and suffering sustained in consequence thereof.

Mr. H. K. Clark appeared for plaintiff, and Mr. C. Lamport for defendant.

The evidence given for the plaintiff sought to establish that he was well until he went to the defendant to extract a tooth, and that such force was used in carrying out the operation that plaintiff's jawbone was fractured, and he was afterwards very ill. Plaintiff's gum, it was alleged, was badly lacerated, and he suffered severely from acute inflammation, being laid up for about a month.

The defendant, who has practised as a dental surgeon since 1870, said he had never received a complaint before. The operation was performed in a proper and efficient manner, and he never heard anything about the matter until the 1st February, when he received a letter from plaintiff's solicitor, the operation having taken place on December 23rd. To the best of his belief he took the tooth out with perfect ease.

Both sides called medical witnesses, and in the end the Judge said as the case involved such serious consequences, he should take time to consider his verdict, and would give judgment at the next Court.

## TRANSACTION IN TEETH.

A charge of obtaining £1 17s. by false pretences was preferred at St. Helens recently against Walter J. Worswick, White Street, Widnes.

Mrs. Eliza Ashbrook, Island's Brow, Parr, said that on February 3rd she went with her husband to Runcorn, and in the Masonic Public-house they met Worswick, who said he was travelling for a firm of artificial teeth dealers. She told him she was thinking of having some teeth, but she had partly given the order to a firm in St. Helens. He offered to put the teeth in for £2 10s., which was less than the previous offer. Mrs. Ashbrook said if he would call at St. Helens during the course of the month she would give him the order. He called the Saturday following and took one tooth out, and gave her a false one in its place. Later he took out other teeth, and she had altogether paid £1 17s.

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The teeth were promised for the Thursday before Good Friday, but they had not been delivered.

Worswick pointed out that he had given every receipt in his own name and on his own stationery.

He had quite a large number of orders to fulfil, and Mrs. Ashbrook's teeth were in course of construction. He absolutely denied all intention to defraud.

The bench ordered a week's remand, and granted bail in £20 and two sureties of £10.

# Obituary.

## JOSEPH WALKER, M.D., M.R.C.S., L.D.S.

THERE passed away on April 13th, in his 83rd year, one of the pioneers of the Dental Reform movement and an honoured member of the profession.

Dr. Walker was born at Bath, in 1825, and originally intended to enter the medical profession, but, after serving part of his apprenticeship, he decided to take up dental surgery. He accordingly came to London, in 1845, and subsequently assisted Thomas Arnold Rogers, of Hanover Square, where he remained till 1852. He then started on his own account, first in Holles Street, then Wimpole Street, and finally in Grosvenor Street, W.

After he had been in practice for some time he entered Middlesex Hospital as a student, where he became a prizeman, and in 1860, he qualified as M.R.C.S., and L.D.S. Two years later he received the degree of M.D., of St. Andrews.

He subsequently became Dental Surgeon to Westminster Hospital, and in 1863 was appointed Assistant Dental Surgeon to the Dental Hospital of London, afterwards becoming Dental Surgeon and Lecturer on Dental Mechanics. His interest in the latter institution was very keen, and he became Treasurer and Trustee at the time when it was decided to move the hospital to its present site. Much of the work of planning and arranging this great work fell on Dr. Walker's shoulders, and in 1900 in recognition of his valuable

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services he was made Vice President of the Hospital, a post which he held till his death.

In professional society work Dr. Walker took a prominent part and filled the various offices of the Odontological Society of Great Britain, and the British Dental Association with credit and distinction. He was President of the former Society in 1883; was an Original Member of the latter Association, and served as President to the Metropolitan and Southern Counties Branches. Last year he was elected an Honorary Member of the Association.

Dr. Walker was a very successful practitioner and had a large and influential connection. He was always anxious to keep up with the times and was an excellent mechanic as well as a good operator. In private life he was a genial companion and kind friend. He found time for useful work on the Urban District Council of Beckenham, where he lived, and had also served the post of Churchwarden at St. Paul's Church in that locality.

About eight years ago a severe illness obliged him to relinquish all active work, and since then he has lived in quiet retirement, a fitting close to a long and active life.

His remains were laid to rest in Highgate Cemetery in the presence of many relatives and friends, among whom were numbered some of the most prominent members of the profession.

# Correspondence.

## ROYAL DENTAL HOSPITAL.

*To the Editor, "British Journal of Dental Science."*

Sir,—The Royal Dental Hospital has now been established fifty years during which time an incalculable amount of suffering has been relieved and many serious illnesses averted by timely attention to the teeth of the poorer classes.

The Committee of Management wishes to celebrate the

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Jubilee by making a special appeal to extinguish the debt on the building, which so seriously cripples the funds of the Charity.

This debt was sanctioned by the Charity Commissioners and entailed a yearly payment to the Mortgagees of £2,975 17s. 4d. for thirty years from 1902, of which 24 years are yet unexpired.

There now remains £47,404 1s. 7d. to be paid to wipe off the debt altogether ; and it is for contributions, however small, towards this sum for which the Committee now appeals. This would mean a saving in the 24 years of about £33,000 in interest alone, and the money thus set free would be devoted to maintaining the Hospital in a much greater state of efficiency than it is at present. It is within the knowledge of everyone that the teeth of the majority of the poorer classes are in a deplorable condition, and that a great number of the children require long and expensive treatment to save them from life-long disfigurement and inconvenience. This they can only obtain at a dental hospital.

Over 100,000 operations were performed here last year, half of which were under anæsthetics.

The Royal Dental Hospital should command universal sympathy and support; not only for the benefits it has conferred on its own patients, but also because it was the first dental hospital in England, and from it all skilled dentistry in this country has developed, thus adding to the health, comfort, convenience and happiness of all classes of the community. About 1,200 students have been educated in the hospital and school.

After fifty years of hard work, it is earnestly hoped that this truly National Institution may be freed in this, its Jubilee year, from the burden of debt under which it is still struggling.

Sir Frederick Treves, Bart., G.C.V.O., C.B., LL.D., Consulting Surgeon to the Hospital, has kindly consented to preside at a Festival Dinner, to be held at the Hotel Cecil on June 25th, in aid of the "Special Appeal Fund."

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Contributions may be sent to the Secretary at the Hospital.

We have the honour to remain,

Your obedient servants,

ROTHSCHILD, President.
KINNAIRD,
F. A. BEVAN, Treasurer, } *Trustees.*
RICHARD WINCH, }
JOHN H. HALE, Chairman.

Royal Dental Hospital,
32, Leicester Square,
London, W.C.

May, 1908.

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# To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street London. W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

No notice taken of Anonymous Communications. Name and address must always be given, although not necessarily for publication.

We cannot undertake to return communications unless the necessary postage stamps are forwarded.

It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.

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British Journal of Dental Science

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# ON THE TERMINATION OF THE NERVES IN THE TEETH OF MAMMALIA.*

By W. J. Law, L.D.S.

No apology is necessary for the reopening of the discussion, time worn though it is, upon the mode of the final termination of the nerve fibres found in the pulps of the teeth of mammalia, for in spite of all the work that has been done upon this subject by very numerous histologists no solution of the problem has as yet commended itself to the majority. At the present time we find that broadly speaking they may be divided into two classes: first, those who think that the fibres after leaving their medullary sheaths actually enter the dentinal tubules and, running in them, terminate in the granular layer of Tomes or at the amelodentinal junction; secondly, those who deny that they enter the tubules but believe that they terminate in or around the odontoblast cells.

Before, however, we enter upon such an investigation there are certain priori considerations which have to be clearly understood for an intelligent grasp of the problem that lies in front of us. The most important of these is the

* Proceedings of the Royal Society of Medicine, Odontological Section.



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sensibility of dentine. We as dentists are, alas, only too familiar with this, and there are few, if any, of us who doubt that this is a true sensibility and not a mere effect of pressure transmitted mechanically through to a sentient pulp. If any doubt exists it should be cleared by the fact that the sensibility of dentine is greatest at its periphery, and that it can be stimulated by such chemical reagents as dilute acids, *e.g.*, phosphoric.

We must all of us have noticed that while the introduction of oxy-phosphate cement is accompanied by no pain in the majority of cases, in those cavities which are very sensitive to excavate, many of which are very shallow and so less liable to transmit thermal changes, such introduction is accompanied by pain of an acute though temporary character. If, then, we turn to physiology for an explanation of this fact we find that so far as is known all sensation in all parts of the body is produced by the direct stimulation of afferent nerve fibres, and thus by inference we should expect to find nerve fibres in the dentine of human teeth at any rate. This is a conclusion that I do not think has been fairly faced by those who deny their presence in dentine ; thus Carl Huber, of Michigan, gets out of the difficulty by denying the sensibility of dentine. He, however, is not a dentist, and I can only conclude that he must himself have either a very good or a very bad set of teeth which have not up to now entailed many filling operations. Hopewell-Smith, while admitting the sensibility of dentine, thinks that it is due to the processes of the odontoblast cells acting as "sensation transmitters," or nerve end organs. Although there can be no doubt that processes from the odontoblasts do enter the dentinal tubules, the difficulties in the way of accepting this view seem to me to be even greater than in Huber's case, for it is to be noted that in the few cases of such nerve end

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organs as we know, the cells that play such a part are derived from the same developmental layer as the nervous system itself—the epiblast—while all investigation up to now has tended to show that the odontoblast layer is derived from the mesoblast. There is, however, an important exception which may seem to militate against the general truth of this statement: the case of skeletal muscle. Skeletal muscle undoubtedly conveys along its length, when excited, a process which is analogous to the propagated condition of excitation characteristic of nerve and spoken of as the nervous impulse.

Muscle, therefore, a mesoblastic tissue, is capable within its own boundaries of behaving like a nerve. This exception, however, only accentuates the position taken above, since the muscle is strangely unable to propagate any excitation beyond itself. Thus the excitement generated in a muscle by direct stimulation of unnerved portions, though travelling throughout the length of the muscle, does not pass into the nerve fibres supplying the muscles nor into any adjacent nerve fibres whatever. Langley has worked this point to some nicety, inasmuch as he has shown that nicotine applied to muscle in the neighbourhood of the nerve ending, and in fact by exciting the muscle itself in this neighbourhood, does not in any way affect the nerve fibres. Muscle, therefore, is incapable of doing what the odontoblast by this hypothesis is assumed to do, since it cannot affect neighbouring nerve fibres. The motor muscle, end plate or nerve ending is, by reason of some unknown quality, a perfect valve allowing a transmission of excitation across it in one direction only, from epiblast to mesoblast. The opposite mode of transmission, from mesoblast to epiblast, is unknown. Nor can this be explained by attracting attention to any intrinsic difference in the nerve fibres in these two cases, muscle and odontoblast. In the case of the muscle we have discussed its relation to efferent

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nerve fibres ; in that of the odontoblast the hypothesis suggests a connection with afferent nerve fibres habitually accustomed to convey impulses towards the central nervous system. Both sets of nerve fibres, however, have the common quality that when once excited at a point they can convey this excitation in both directions ; if the muscle did excite its efferent fibre that excitement would be conveyed. The point is that the muscle does not succeed in accomplishing this initial excitation, and there is similarly no ground for supposing that the odontoblast would succeed in doing what the muscle fibre cannot.

Such a theory of the function of the odontoblast cell either postulates a condition of things differing essentially from that found in any other portion of the body, and so only to be received with the utmost caution and upon the most incontestible evidence, or must be accompanied by proof that the odontoblast cell is an epiblastic structure. Such proof has never been attempted. The argument and long list of reasons for assuming such nervous function given in the paper* do not seem to me to be of the necessary weight. Thus "the axiom that dentinal fibres are considered to be sensation conductors is well known to all" is very much like begging the question, for it assumes as an axiom the very fact he is labouring to prove, and so the rest of the argument : "inasmuch, then, as they are regarded functionally in the light of nerves, and as they represent the peripheral poles of the odontoblasts, and are in fact part and parcel of those cells, it follows that the latter must be concerned in the act of conveying extrinsic stimuli to the nerves of the pulp," again assumes that the odontoblast processes are the *only* contents of the dentinal tubules—which is the point in dispute. Again and again does this author, in his reasons for doubting the dentine-forming functions of the odontoblasts,

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assume that they are concerned in sensation and then conclude that as they do not form dentine they must be sensation transmitters.

In the second place, this theory is inadequate to account for the varying sensibility of dentine, which ranges from almost complete absence to the sharpest of sensations. Is it seriously suggested that it depends upon the number of dentinal tubules?

Lastly, it must never be forgotten that negative evidence is at the best inconclusive, and that even one small piece of positive testimony is worth many larger pieces upon the other side, and that observers such as Oscar Romer have stated that they have seen the non-medullated fibres actually passing into the dentinal tubules; so that although the famous example

* Trans. Odont. Soc., 1893, xxvi., p. 9

of the true nature of the Nasmyth's membrane must make us very cautious about accepting a priori or analogous reasoning, it seemed necessary first of all to work upon the assumption that the fibres do actually enter the tubules as the most likely theory.

The literature upon the subject is mostly connected with the names of Morgenstern and Oscar Romer. The work of Morgenstern may be very briefly dismissed. Working by Golgi's method he concluded that all black staining was due to the presence of nerve fibres, and found several present in each tubule. But we know that silver nitrate alone will stain Neumann's sheaths, and I think that the thin black lines seen by him are an optical illusion caused by diffraction images of the cut walls of the tubules. Not only did Morgenstern fail to show that these black markings proceeded from the nerve fibres in the pulp, but he threw what I believe to be undeserved suspicion upon Golgi's method used in connection with the investigation of teeth. Oscar Romer's

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work, on the other hand, cannot be so lightly dismissed. Using the intravitam method of staining with methylene blue he figures the fibrils as entering the odontoblast cells and proceeding in them as far as the granular layer of Tomes. There is nothing unlikely in this, as it is strictly analogous to the method by which the axis cylinder obtains its medullary sheath.

"Each nerve fibre develops as an independent outgrowth from a nerve-cell and grows distalwards, finally becoming united to other tissues (*e.g.*, muscle fibres) in the periphery of the body. At first the axon is naked throughout its entire length, but later in development it becomes sheathed" is the most favoured view of modern neurologists, as against the idea that the nerve fibres are composed of the specialisation and linking up of cells already present in the peripheral parts of the body.*

The principal reason why Romer's work is not more universally accepted seems to lie in the fact that he made use simply of drawings to illustrate his argument. Not having had the opportunity of examining his slides, I am unable to express any views upon his work save that, as I have mentioned before, a piece of positive evidence of this kind seems to me to carry much more weight than many more apparently satisfying researches with negative results. One rather suspicious result of Romer's is that he did not find nerve fibres at the neck of the tooth, which we know from experience is usually the most sensitive spot.

In the attempt, then, to demonstrate the presence of nerve fibres in dentine all the most modern methods of staining nerve were reviewed to find the most suitable for use in the special processes concerned in the obtaining of sections of teeth with both the hard and soft tissues in situ. During the

* See Halliburton, "The Repair of a Nerve," *Science Progress*, Jan. 1908.

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last few years much attention has been paid to the demonstration of nerve fibres in all parts of the body, and many new and improved processes have been invented for the purpose. At the present time the principle methods in use are the methylene blue and those associated with the names of Golgi, Ramon y Cajal and Bethe. Owing to the great difficulty of obtaining thin sections of teeth with the hard and soft tissues in situ without decalcification I have not been able to get any successfully stained specimens by the methyene blue process, the acid used destroying the stain. Ramon ly Cajal's method of staining with silver nitrate and developing with a photographic developer has also up to now been unsuccessful in my hands ; but the method of Bethe seemed almost ideal. His process is long and complicated, but as it may not be generally known I append a description of it, as varied for use with teeth :—

Small pieces of perfectly fresh tissue are fixed by placing upon blotting paper and covering with a ten per cent. solution of commercial nitric acid. This serves to decalcify as well as to fix them and also lessens the susceptibility of Nissl's granules to take the stain. They are left in the acid until decalcified (forty-eight hours) and the acid is frequently changed so as to keep it of as uniform a strength as possible. They are then placed in 8 c.c. of alcohol, 90 per cent., 3 c.c. of water, and 1 c.c. of ammonia for twenty-four hours. If they turn brown, discard. This is due to impure nitric acid or too long immersion. Again place in alcohol for six or twelve hours, then in 1 c.c. of HOl, 3 c.c. of water, and 8 c.c. to 12 c.c. of alcohol for twenty-four hours. Then alcohol again for ten to twenty-four hours, distilled water for two to six hours (not longer), ammonium molybdate, 4 per cent., for twenty-four hours. Dehydrate as rapidly as

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possible and imbed in paraffin; cut sections as thin as possible; attach the sections to the slides with Meyer's albumin; wash out the paraffin with naptha and alcohol; rinse the slide with distilled water; then cover the sections with distilled water and heat for ten minutes at 50° C. to 60° C. The top of the imbedding bath is a very good place for this. Pour off the water and cover with toludin blue, 1 in 4,000; replace in the paraffin bath for ten minutes; dehydrate clear and mount. Keep all the sections and, if you are lucky, some of them will be found to have the nerve fibres duly stained.

Some of the results obtained by this process are seen in the photo-micrographs which I now show. The first is taken from the incisor of a rabbit, the second from a transverse section, taken near the neck, of a human canine. But before I show you these I want to show what is the general result of the fixing in nitric acid, which you may consider a somewhat crude procedure, calculated to shrink and alter considerably the soft pulpal walls with which it comes into contact. I show a photo-micrograph from such a series, but stained with methylene instead of toludin blue. You will see that while the ground substance of the cells has been eaten away to some extent, very little, if any, appreciable shrinkage has occurred. This is better shown in the more highly magnified photo-micrograph; but before we leave this I would like to refresh your memories as to the general distribution of the nerve bundles in this region of the pulp.

"Entering the apical foramina the bundles of medullated nerve fibres pass collectively into the pulp in lines directly corresponding to its long axis. In every case the chief nerve fasciculi run alongside the larger blood-vessels and in their areas of distribution follow them closely." Here you will see the blood-vessels running not in the centre of the pulp,

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but on the palatal and buccal aspects, and the main bundles of nerves running alongside them in the same sheaths. Arranged around the periphery of the pulp and just underneath the basal layer of Weil, are the smaller bundles produced by the splitting up of these larger ones. The ultimate destination of these smaller bundles, then, is the problem to be solved. The next slide is from the same pulp more highly magnified and shows the odontoblast area, here two or three cells deep, with the odontoblast processes running into the dentinal tubules, and I think you will agree with me that it does not seem to have suffered much from its bath of nitric acid. The next is from a transverse section of the incisor of a rabbit treated by the Bethe process and shows the odontoblast area again. Running up from the basal layer of Weil are a number of long nerve fibres which penetrate the odontoblasts right to the dentinal edge. These are still better seen in the next slide, taken from the same series of sections, but embracing also part of the dentine. These appearances led me to endeavour to stain a human pulp in the same way and the result is seen here. This shows the same mass of nerve fibres running up from the basal layer, and you will see here one running directly from the medullated nerve bundle. It is to be noticed that these fibres are very much larger than one has been led to expect from early researches. Myriads of minute scopiform strands is the description by Rose, and other writers describe similar appearances of large numbers of interlacing fibres which have been called the plexus of Raschkow. In none of my sections stained by this or the Golgi process have I been able to obtain such appearances. On the contrary, I have found the nerve fibres to run directly, almost in straight lines, to their destination between the odontoblasts, and I am strongly of the opinion that the so-called plexus is not composed of nerve

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fibres at all, but is made up of connective tissue bundles running upwards and forming the structural skeleton of the pulp.

In none of my sections stained by the Bethe process, however, was I able to detect any passing of the nerve fibres into the dentinal tubules. The dentine in decalcified specimens stains in a very curious way, the exact significance of which I have not yet been able to make out. It was therefore necessary to try some other methods of staining, and Golgi's process was the next to give me any results. In spite of the suspicion cast upon this process as applied to teeth by the hasty conclusions of Morgenstern, and of the more recent methods of Ramon y Cajal, which are superseding it, Golgi's methods remain the classical methods of investigating the distribution of nerve fibres, and no worker can afford to ignore them. If used with due care and discrimination they give reliable results and offer certain advantages in the case of teeth, in that sections do not require to be very thin, but rather give better results when fairly thick. Golgi's rapid process was selected for use. Sound, freshly extracted teeth were sawn into small pieces or ground on a wheel so as to expose the pulps, and then immersed in a mixture of 8 c.c. of potassium bichromide, 2·5 per cent.; 2 c.c. of osmic acid, 1 per cent. The pieces were taken out in from three to five days and immersed in 75 per cent. silver nitrate for twenty-four hours, then embedded by the Koch-Weil process in hard balsam, and rubbed thin in the usual way with ground glass and pumice. This process seems to me the least open to objection of any process of obtaining sections of teeth with pulps in situ. No unusual or strong solutions of acids come in contact with the tissue, and compared with most of the other methods it is short and simple; its only drawback is the uncertainty of the results

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given by it. In some of them the appearances are due to tissues that have not as yet been described, whilst in others blood-vessels instead of nerves have been caught by the impregnation, but in successful specimens the appearances all point to the actual entry of the nerve fibres into the dentine. This picture is taken from a transverse section of a human canine just at its neck below the enamel. Here you see the black nerve fibres running into the dentine; from their position I think there can be no doubt of their nervous nature. Here the main nerve trunk round the blood-vessels is clearly seen, and these fibres run out from it in slightly sinuous fashion between the odontoblast cells, also slightly stained by the chromate of potash, and are clearly recognisable as such right up to and into the dentine itself.

The next is taken from a longitudinal section of a human canine, again stained by Golgi's process. While the rest of the tissues are not shown as in the last specimens, and so the certainty of the identity of these with nerve fibres cannot be made out, a comparison with the toludin blue specimen shown earlier will show that the two are strictly in accord with one another, and this picture better than any other shows what I believe to be the true relation and destination of the non-medullated fibres of the pulp.

To sum up, these pieces of evidence seem to agree in the main with Romer's contention that there are nerve fibres in the dentine of mammalian teeth and that the sensibility of dentine can thus be accounted for. With his statement that they diminish in number as the cervical edge of the tooth is approached, and that none are present in the roots, I am unable to agree, as, indeed, the clinical fact that the most sensitive dentine is that at or below the gum margin seems to indicate. Also I have not as yet been able to obtain any

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appearance of these nerve fibres actually entering the odontoblast cells. In the second place I believe that the nerve fibres run directly to their destination and that the plexus of Raschkow, either as a true plexus or a mere interlacing of nerve fibres, does not exist at all, but that the appearances presented by it must be put down to some other cause.

I desire to tender my best thanks to Professor MacDonald, of the Sheffield University, who placed all the resources of his laboratory at my disposal, and without whose stimulating interest and help in every detail of the work this paper would never have been written.

# THE PURPOSES AND ACCOMPLISHMENTS OF MODERN ORTHODONTIA.*

By Rodrigues Ottolengui, M.D.S., LL.D.,
New York, N.Y.

What is "modern orthodontia"? By this term I do not mean to differentiate between one school and another; the modern orthodontist is not necessarily a member of any clique, or class, or clan. Modern orthodontia is the orthodontia of to-day in contradistinction to the art of yesterday, just as modern dentistry differs from the dental science of twenty years ago. I must dwell a moment upon this point. There may be some who will argue that the differences between the to-day and the yesterday in orthodontia are so great that the modern orthodontist is a newly created being, the product of entirely new teaching and the practitioner of a totally new art. They will point out the radical differences between the past and the present in proof of their

* Read at the Jamestown Dental Convention, Norfolk, Va., September 11,th 1907, and published in the *The Dental Cosmos*.

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contention. I shall myself indicate some of these radical differences, but I shall speak of them merely as stages of progress, not as factors in invidious class distinctions. Similar and quite as conspicuous differences between the past and the present may be found in other fields. Indeed, the most radical innovation upon a long-established dental method is the evolution, now nearly completed, in the art of filling teeth. The mechanically secured metallic filling is slowly but surely being abandoned in favor of fillings retained by cementation. The chief work of this carefully planned dental convention is the exploitation of this idea. This is modern dentistry, and modern orthodontia has made no greater departure; yet I do believe that there is a line of demarcation in orthodontia which is quite as important, quite as radical.

## Orthodontia of the Past.

In order that we may fully comprehend the period which marks the beginning of a new era in orthodontia, let me briefly sketch its early days. Long before the word orthodontia was coined we spoke of "irregularites of the teeth" and the "correction of irregularities," or, otherwise, "the straightening of teeth" I shall not probably reach a better point at which I may tersely differentiate between the old and the new in orthodontia. Formerly the straightening of teeth was the primary aim of the operator; now it is but an incident in the everyday work of the orthodontist. Yesterday, the tooth-regulator tirelessly worked to place teeth in a symmetrical alignment; to-day, the orthodontist aims to restore occlusion, thus establishing normal functioning of the dental organs. In the past, teeth were placed where they would look pretty; in the present, they are moved so that they will be the most useful.

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In the early days the mother noticed when the teeth were shed that her baby's new teeth were "coming in crooked," and in alarm she hurried to her dentist to know what was to be done; and at that time the mother instinct was wiser than the dental knowledge of the day, for the dentist usually advised delay and "giving nature a chance," not realizing that delay gives nature no chance whatever.

At the age of twelve or fourteen, however, the patience of parents usually ended, and dentists were compelled by importunity to "do something." Then what occurred? To this point I request your particular attention. In such predicaments, the dentist usually made models and studied the case. He studied the case as a problem by itself—a case to be treated, and if possible corrected, exactly as though there never had been another like it in the world. He made his diagnosis in accordance with what he felt capable of accomplishing, and he designed appliances to aid him in his work. If he made a conspicuous success he proudly wrote a description of his management of the case and published it, with illustrations of his fixtures. The early history of orthodontia is crowded with articles of this sort—individual cases, treated in accordance with individual ideas and with appliances specially designed for each particular case. The modern orthodontist glances through these articles and feels sorry for those early workers, struggling without knowledge to accomplish results which they scarcely comprehended themselves. Yet these men were the pioneers, and without the foundation which they laid the edifice of modern orthodontia never could have been erected.

While, as I have said, special devices were made for each case, those men who developed a fondness for the work, and thus attracted to their care any great number of

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cases, very soon noticed certain features common to many cases; and from that time on appliances were recommended that would do certain work in any mouth—as, for example, fixtures for widening the arch; the use of bands cemented to the teeth; the expansion arch wire; jack-screws; spring wire appliances, etc. And as these grew in number, so-called "systems" began to arrive. Of the systems we have several which bear the names of those who have devoted themselves each to the elaboration of one. But the advent and perfection of none of these systems has made that great impression upon orthodontic practice to which I have alluded as establishing a demarcation between the old and the new ways. True modern orthodontia dawned with the announcement by Angle of his classification of irregularities, which since then has come to be a standard for both diagnosis and drognosis.

### The Angle Classification.

Just as many practitioners observed that a majority of cases require so-called widening of the arch, Angle noted that many other features were common to many mouths. By closely studying the models in his own and other cabinets he finally evolved a classification in which he places all known irregularities in three great classes; of these there are divisions and sub-divisions. Though at first it may seem to the student that this Angle classification is complex, it really is exceedingly simple. At the same time it is so important, being as it is the rock and foundation of all correct diagnosis, that I shall here take time to expound it to you, with the aid of the lantern. [The essayist here threw on the screen examples of each division and subdivision in the Angle classification.]

### Forms of Malocclusion not Classified.

In addition to the three great classes there are two other

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forms of irregularity to which I will allude. As I have already pointed out in exhibiting the slides, in class I the mesio-distal relations of the molars are normal. In class II the lower molars are distal to normal, and in class III. the lower molars are mesial to normal. In the sub-divisions we have instances where the molars are normally related on one side and abnormally placed on the other. But cases have been noted where the lower molar may be distal to normal on one side and mesial to normal on the other. Such a case, of course, falls outside of the Angle classification. Nevertheless, a knowledge of that classification, with the habit of utilizing it as a basis of diagnosis, quickly determines for the orthodontist the line of treatment to be followed. Observing that on one side the molar is distally related, he sees that it must be moved mesially into normal occlusion ; on the other side he finds the molar mesially placed, and it therefore must be carried distally ; and studying both sides, he sees that the movement of the lower arch must be all in one direction, around its arc. This movement is accomplished by using intermaxillary elastics, placed reversely on the two sides.

The other rare abnormality of which I shall speak is that occasionally alluded to as "double protrusion." I have unfortunately had four such cases in my practice, all coming within the conditions of class I of Angle. Indeed, I should find it difficult to even imagine a double protrusion of either class II or class III. And this is exactly why these awful cases are so difficult—a statement which brings me to a mmoentary consideration of so-called protrusions. A protruding upper jaw, in a class I case, is generally accompanied by wide spaces between the teeth, and, the molar relations being correct, the treatment is usually simple, demanding merely the reduction of the prominent teeth

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into a proper arch. Occasionally a class I case may have a narrowed vault and a protrusion of the anterior teeth ; here, again, the protrusion may be corrected by moving the upper teeth into proper arch alignment. In both cases the lower jaw may be utilized as anchorage for intermaxillary force while reducing the upper protrusion. If, however, there be an anterior protrusion of the lower arch also, the utilization of intermaxillary force would not be so simple. Indeed, it has been asked, How may we use intermaxillary elastics to force the upper jaw backward, coincidently with similar use of similar force to move the lower jaw backward ? At first glance the proposition seems ridiculous ; yet I believe that intermaxillary force may be advantageously utilized in double protrusion—though this is not a fit time to discuss it. The point at which I am aiming is that the protrusion of both jaws places a case in an entirely different category from protrusions, or so-called protrusions, of one jaw.

In class II. cases the apparent protrusion of the upper is largely magnified by the retrusion, or lack of development of the mandible. A study of the profile shows that the fault lies largely in the false position of the chin and lower lip. Properly treated, at the proper age, very little reduction of the so-called protrusion is needed, provided the lower can be moved to true relations. The same is true of class III. cases, the seeming lower protrusion disappearing with the development and forward movement of the upper arch and lip. In both instances the profile is suffering from a lack of development and consequent lack of balance, as I shall shew with slides later. Moreover—and please bear this fact in mind—it is the undeveloped part rather than the seemingly over-developed part that mars the profile.



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### Extraction Indicated in Double Protrusion.

With the double protrusion exactly the reverse is true; the features are marred by the over-development of both arches. And at this point I wish to introduce an argument for the future careful consideration of orthodontists. In class II. and class III. cases true balance may be established, in the vast majority of cases, without extracting any teeth; indeed, it would be hard to properly correct such cases after extraction. The exceptions are so few that they fall into the list of true deformities, or monstrosities, rather than mere abnormalities. In such cases, also, there is invariably a departure from type in the profile. How is it with the double protrusion? I have pointed out that the single protrusion—if I may be pardoned for using such a term—is mainly due to lack of development of one jaw, while the double protrusion is an over-development of both jaws. Again, the single protrusion is a departure from the type for the profile. In regard to double protrusion, I believe that a close study of such faces would show that the double protrusion is often an approach to type rather than a departure—that it is an atavistic throw-back of ancestral origin. This is important if true. For example, should we find a double protrusion accompanied by proportionate narrowing of both arches, the face being likewise narrow, we should be entirely right in attempting a restoration of normal arch width and shape—thus reducing the protrusions and restoring facial balance—without extraction of teeth. If, however, we should meet a case with normal arch form and relations, nevertheless showing marked double protrusion, with the face normally wide, what interference to undertake would be a grave question. Such a condition is a normal type, and is counted a deformity only because it is rare and there-

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fore different from the faces about us. Rather than disturb such a normal occlusion it might be excusable to extract teeth in order to reduce the protrusions, though it should be remembered that such treatment would never change such a face to a normal type. Fortunately such cases are extremely uncommon, and for all practical purposes may be placed within the list of deformities and monstrosities—where, and where only, is extraction excusable.

### Etiology as a Factor of Treatment.

The modern orthodontist likewise makes a study of the causes which produce or invite irregularities of the teeth. It may be truly said that etiology has always been considered, but never until within recent years has it so materially influenced modes of procedure. For example, I cannot here go deeply into the question of the causation of cases of class II. and class III., but I may say that since we have concluded that these apparent protrusions are really in a large measure ocular delusions, and that the patients are in fact suffering from a lack of development of either the upper or the lower arch, we have come to see the necessity for earlier intervention. Referring back to the earlier part of this paper, I remind you of the mother who visited her dentist when her child's teeth began to erupt "crooked." To-day she would be advised that immediate intervention is imperative. Indeed an arrest of development can often be distinguished prior to the loss of any of the deciduous teeth, and slight forces exerted at such periods will so invigorate the parts that development may be resumed, complete growth may result, and a perfect denture may erupt where, without interference, a quite extensive abnormality would surely have supervened.

Much has been said and written about adenoids as a cause of irregularities. The common argument is that nasal

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obstructions—whether from adenoids or deflected septa, hypertrophied turbinates, or polyps—compel mouth-breathing, which in turn moulds the arches to become narrower than normal. It appears to me that the most important relation of nasal obstructions to irregularities has not received sufficient attention: However much mouth-breathing may affect the shape of the arches—and this has yet to be demonstrated with anything like exactness—I believe that the more important fact is that from improper breathing the child receives a disproportionate share of oxygen, and that from a lack of this element nutrition is impaired. When it is remembered that the alveolar processes are subsidiary bones, and that they are produced only as needed, we can readily conceive that a poorly nourished child may not be hypscially able to build bone as rapidly as the erupting teeth demand. Hence we have teeth erupting into arches which never grew, rather than arches which have been narrowed. However this may be, the modern orthodontist recognizes now the need of a more thorough comprehension of the etiology in order to cope to the best advantage with the abnormalities that abound.

SUMMARY.

To sum up, I would state that the *purposes* of the modern othodontist are—First: To recognize the advent of dental abnormalities as early as possible, that treatment may be to a large degree preventive. Second: In the presence of a lack of development of the jaws, to stimulate growth along normal lines. Third: To so move all the teeth of both jaws that normal occlusion may be restored. And the modern orthodontist believes that the nearer he comes to normal occlusion, the more certainly will he achieve the best possible facial results, and likewise the best arrangement of the teeth looking toward their prophylactic preservation.

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In the title of my paper I also allude to the *accomplishments* of the modern orthodontist. In connection with this phase of my topic I have the pleasure of presenting to you a number of lantern slides showing the work of various men in all parts of the country. The point is that whereas in the past a few men with their systems have achieved fine results, such results were nevertheless confined to a very limited number. Since the advent of the Angle method of diagnosis based upon a classification, however, an increasing number of specialists are accomplishing similarly fine results —all working along similar lines with simple apparatus.

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Something About the "Retention of That Filling." Certainly no wise operator will depend solely on cement for retention. He will not throw away any advantage at his command to make his work stand. Every practitioner has had case after case where he would almost give his soul for the chance of driving in just one or two more nails to make him feel just a little more secure and comfortable about the "retention of that filling." Now, the cement is just that longed-for "additional nail or two." That this adhesion of filling to cavity wall is a substantial reality and not a mere dream has been fully demonstrated time and again by experience.—C. B. Rohland, *Dental Review.*

Should we Devitalize Prior to Crowning?—The question of devitalizing the pulp of a tooth which is to be crowned is not one of personal equation, nor one which should be decided by the pet hobby of any man, but is simply a question of, first whether it may be placed in a condition which will be most favourable to its comfort and longevity unless this is done. If such a tooth can be prepared from a mechanical aspect so as to admit of the accurate adjustment of an artificial crown, and if such preparation does not seem to endanger the vitality of the tooth, then to devitalize the pulp would perhaps be unnecessary, and consequently wrong, but unless this may be done, and done in a thorough and conscientious manner,—which is seldom possible—then devitalization becomes an absolute necessity, and must be resorted to whether we believe in it or not.—Hart J. Goslee, *Items of Interest.*

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British Journal of Dental Science.

LONDON, JUNE 1, 1908.

## AN INTERESTING REPORT.

The reports of the London and Counties Medical Protection Society are generally interesting reading, as dental affairs occupy no insignificant portion of the Society's activities. The latest report, published in the *Medical Magazine* for May is no exception to the rule, and we shall briefly touch on some points which have a bearing on professional life.

There is, of course, the usual crop of complaints received from registered practitioners against the unregistered. One member wrote saying that "men were going round from house to house in his neighbourhood touting for dental patients, using cocaine as a local anæsthetic, and extracting teeth in the patient's own houses. He had heard it from medical men who had been troubled by the results of their work. He feared that they could not be dealt with under the Dentists' Act as they used no titles, but he asked could they be proceeded against under the Pharmacy Acts or otherwise." He was advised by the Society that the best chance of catching them would be under the Dentists' Act for describing themselves, as they probably did when touting for patients, as being specially qualified to practise dentistry. As they merely used poisons and did not sell them it seemed improbable that they could be proceeded against under the Pharmacy Acts.

With respect to the use of cocaine, by the way, a dental member wrote to the Society saying that he had heard that

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the Society would take no action in cases in which cocaine was used. He would be glad to know if this was the case. He was told in reply that the information he had received was without a particle of foundation. A former Lord Chief Justice had laid it down that a dentist ought not to administer a dangerous anæsthetic like cocaine without the presence of a medical man, but his pronouncment was not generally accepted. It had received no countenance from that Society.

There are reported some curious cases in which patients either repudiate their debts or bring charges of negligence and injury. Sometimes both species of acquisitiveness are combined, with threats that if the dentist does not pay compensation or return fees paid he will be exposed and vilified. Such a comparatively innocent performance as that of taking an impression has been made the pretext for claiming damages by a "lady patient," on the ground that in taking the model the dentist had "ricked her back." Needless to say the claim was repudiated and the matter dropped.

One case, not without its moral, was that of a dentist who had omitted to notify his change of address to the General Medical Council and was consequently crossed off the Register, but subsequently reinstated. During the time that he was temporarily "unregistered" he had done some dental work for a patient and wished to sue for the fees. The fact that he was not on the Register when he did the work made his success in the County Court so improbable that on the advice of the solicitors he withdrew his action.

In conclusion, we note that "a dental member kindly forwarded to the Society reports of prosecutions of unqualified practitioners for using additions and descriptions implying that they were specially qualified to practise dentistry. The cases were of much interest, as in some of the cases conviction had been obtained for descriptions and additions which had previously been used with impunity by unqualified persons."

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CHOKED BY FALSE TEETH.—Mr. Edward Boase, County Coroner, recently held an inquiry at the Guildhall, Helston, into the death of Miss Mary Coad Dunstan. Dr. W. R. Greening, locum tenans, for Dr. W. R. Taylor, stated he got to the house about 6 o'clock and found deceased dead. He made a superficial examination and could find no cause for death until someone referred to the fact of not being able to find deceased's false teeth. They were packed right across the windpipe and he was of opinion she died from suffocation. The jury returned a verdict accordingly.

"REMARKABLE TESTIMONY."—*The Lancet* extracts from the advertisement columns of the *News of the World* of Sunday, May 10th, the following, which is described by our contemporary—with whom we agree—as remarkable testimony: "Dr. Chas. Forshaw, M.D., Ph.D., F.R.M.S., F.C.S., D.Sc., the eminent scientist and literateur, of Baltimore House, Bradford, Yorks, Editor of Yorkshire Notes and Queries, etc., makes the following laudatory remarks about the safety, purity, and efficacy of Dr. Cassell's Tablets. Dr. Forshaw says: I have thoroughly tested, both scientifically and practically, the preparation known as Dr. Cassell's Tablets, and can conscientiously recommended it as an eminently safe and effective remedy for all forms of nerve and bodily weakness. My knowledge of Dr. Cassell's Tablets leads me to the opinion that the ingredients employed in their composition form a unique synthesis, the whole combining to form what I consider to be a remarkably potential medicine, quite safe for young and old, in cases of nervous prostration, debility, anæmia, loss of flesh, malnutrition, children's weakness, spinal and nerve paralysis, and many forms of stomach and kidney troubles. I read they can be taken by stout people as well as thin without fear of increase of adipose tissue, and from their composition I should consider this to be the case. I have never before testified to a patent medicine, but now take pleasure in the interest of science and humanity, in making the above statements.' "Dr. Cassell's

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Tablets can be obtained for 10½d., 1s. 1½d., and 2s. 9d. (containing nearly four times the 10½d. size), of all chemists. Advt." Mr. Forshaw is a dentist who lives, according to the Dentists' Register, at Hustler Terrace, Bradford, and his wealth of American degrees has received some comment in *The Lancet*. Having been in dental practice before July 22nd, 1878, his name is included in the Dentists Register, but if he is going to recommend in the lay press an "effective remedy for all forms of nerve and bodily weakness" the General Medical Council may consider his inclusion among official dental practitioners."

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Dangerous Dentistry.—A writer to the *Daily Mail* says: "In a letter to the *Daily Mail* published some time ago I referred to the dangerous practice of many dentists of neglecting to sterilise, or even wash, their instruments before treating a fresh patient. I am astonished to find that the appeal met with a feeble response. Dr. Romme's crusade against kissing as infectious will not curtail a single kiss; but I do think it would be a boon to humanity if someone would take up the cudgels in defence of a long-suffering and toothaching British public."

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# Abstracts of British & Foreign Journals.

## PERSONAL EXPERIENCE.

By Dr. L. P. Haskell.

Dental practice is flooded with theories, some proved correct but practically of no account, others never proved but still urged.

Personal experience, however, is very potent sometimes in the settlement of so-called theories.

A personal experience of twelve years in the use of a full lower denture has very forcibly revealed to me some things not otherwise attainable.

One problem of the dentist is the excessive absorption of the lower jaw until, in my own case, there is but four-sixteenths of an inch of bone left in the region of the first molars. In addition to this, there is often a flexible condition of membrane over a considerable portion of the jaw. A plate constructed for such a jaw, I care not what the impression is, will not prove at once comfortable, when the pressure of the muscles is brought to bear upon it. There will be irritation at various points that must be relieved, for it is impossible to masticate otherwise. In such cases it will be weeks before perfect comfort and usefulness is acquired.

I say that no dentist who has not had this personal experience in his own mouth has any idea of what patients often have to contend with and too much effort cannot be spared to inform the patient of what they may have to experience and to impress upon them the necessity of going to the dentist for relief at once in case of irritation.

Why there should be such excessive absorption of the lower jaw I never have been able to understand. It proceeds regardless of what material is worn upon it, in fact when no plate has been worn after the loss of the posterior teeth.

In these cases there needs to be restoration where the process is lost in order to restore the contour of the lips. This makes a long bite, which necessarily increases leverage

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in mastication, making the plate more difficult to use for a time.

In this class of cases it must be borne in mind that although there may be some depression on the lingual side of the jaw, the plate cannot be worn below the margin at all, because it will be lifted not only by the muscles, but by a mass of glands and loose membrane. Even laying the end of my finger firmly a very little over the margin upon lifting the tongue the finger is displaced.

It is just here that many patients are enduring unnecessary annoyance because the dentist has thoughtlessly extended the plate below the margin.

For many years I recommended the use of cast metal plates. The second plate I made for myself was one of them. After having them in for a short time I went into the laboratory and leaned forward to speak to a student and the denture slid forward, because on this flat jaw there was nothing to resist the weight. That night, when lying down, it slid into the cheek, so I had no further use for it.

Of course, if there is a ridge to straddle that trouble would not occur, but my experience has fully demonstrated to me that a vulcanite plate is just as good upon any lower jaw as any thing that is worn, and that weight is not a necessity in any case.

I have found that a flange on each side is an advantage in that the cheeks hold the plate down and keep it from moving forward.

In relieving the irritated spot, although it is readily seen, it is not always easy to locate it on the plate. Take a little moist whiting on a spatula and touch the spot, and upon replacing the plate it is readily seen.

Where the posterior teeth have long been removed and a plate worn, and later on the anterior teeth are removed and a full plate worn, as the anterior gums settle and the bite shortens at this point, the posterior teeth do not shorten, and under pressure there results irritation at the heel. The remedy is found in shortening the molars and not in filing the plate.—*Dental Review.*

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# A FEATURE OF THE COMING ERA OF DENTISTRY.

By Burt G. Simmons, D.D.S., New Brunswick, N.J.

With the advent of the gold inlay, porcelain inlay, improved plastic filling materials, and improvements in bridges and crowns, dentistry is passing from one era to another.

Modern dentistry, the dentistry which we are just entering upon, is as great a departure from the dentistry of the past 30 years as that was from the preceding 30 years.

Conditions surrounding operations within the mouth are totally changed. With the passing of the cohesive gold filling, in those cases where caries is to any degree extensive, and in avoiding the tedious hours of nervous wear to both operator and patient in inserting this gold, we are also relieved of its accompanying discomfort, the rubber dam.

In the coming dentistry, aseptic absorbent preparations of cotton will practically supplant the dam. For the short operation of setting an inlay, a cotton roll quickly adjusted is all sufficient and is ideal for the purpose. Progress in respect of material has been made in line with the progress in dentistry and in general surgery.

With a knowledge of the necessities of asepsis and careful study as to various forms of material required, absorbent preparations have been given to the dental profession which are prepared with the same skill and care as to asepsis and perfect surgical cleanliness as are dressings for the general surgeon.

Absorbent and non-absorbent dental rolls, which have already proven themselves so valuable and so simple in preserving dryness for the insertion of fillings, the attachment of bridges, etc., seem to have come as a forerunner of the coming dentistry, where they bid fair to become the almost universal means of maintaining dryness for operations within the mouth.—*Dental Office and Laboratory.*

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# SOME PHASES OF SURGERY IN ROOT CANALS.

By R. E. DARBY, M.D., D.D.S., SPRINGFIELD, MO.

WHEN the potassium and sodium preparations were announced to the world, in 1893, I considered it a great step in advance; but later almost discontinued its use, as I found other methods more effective in my hnnds for opening root canals. The sulphuric acid treatment promised much, but because of the associated peridental inflammation had to drop it, except in some rare cases of crooked roots.

Instruments are much used these days for opening root canals. The skillful use of them will do as much to shorten the laborious hours of the dentist as any other aid of our times. Others must be considered among the most dangerous instruments that have come into our hands. Many of the older, and some of the present, makes are too large and too clumsy, too much wanting in the possibility of application to be considered by the prudent dentist. Some tools advertised for opening canals would bore a hole too big for a dowel pin.

A broach for opening a canal should not be a drill. It must be remembered it is not our object to drill a hole, but enlarge an opening already there, so that the end of it may be properly sealed. The best instrument so far devised is a twist broach with a round point and does its reaming from the sides. It should be of very flexible tough steel. It should not be of the same diameter its entire length, but should taper as do the canals. Then it will prepare the opening so it can be positively filled and that without using a large, clumsy something to fill it with.

For comparison, I wish to mention two types of twist broaches: the Downey and the Kerr. The latter, I unqualifiedly condemn for general purposes. The Downey is of more scientific conception. It is well known that the company that makes both of these has a man going over the country demonstrating their goods, who argues that the drill-pointed broaches should be used, as they clear themselves of debris, while the round-pointed push it through the apex. That may sound reasonable to one who has thought only about the subject and is without clinical experience or knowledge of laboratory tests. A convincing laboratory test may be made by selecting a tooth with a curved root, open it with

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a fine Downey broach, then instead of using medium-sized broach of some make, take medium of drill-pointed variety. It will not even follow where the other has opened canal, but will leave it at the curve and pass through the side of the root. Repeated laboratory tests will show that the hard, dry specimens of crooked roots can be perforated, operating the drill by finger movements. What, then, is liable to happen with the softer teeth in the mouth when the same kind of drill is driven by the engine? Even, if used cautiously and by finger movements, a root may be pitted, if not perforated so that no instrument will afterwards pass the curvature. A multi-rooted tooth so perforated and filled, the filling passing beyond the perforation, makes an ugly case for some innocent man at a later date to diagnose and treat. The X-ray may be called in to locate the extended fillings, and they may be surgically removed from within or from without, but in some cases this is very difficult to do, to say nothing of what it means to the patient. It would certainly be better to avoid such necessity.

A reamer is one thing and a drill is another. Is it not time to call a halt on the drill method of procedure? The method of using the reamer is important. They should be selected in assorted sizes and with short handles so they can be manipulated with the fingers. Nothing can take the place of the cultivated, delicate touch. It being auger-shaped, must not be twisted deep enough in the canal to become fastened. Insert in opening, make a turn, then withdraw; then another turn, and withdraw, &c. It is surprising how this instrument will follow the windings of a small canal and with what rapidity and ease and safety the ordinary canal may be opened, when the fingers are trained to do it. A reamer of this style will cut away nodules along the canal walls. It makes elliptical or flat openings round or at least, the apical one-third is made approximately round. This makes sealing apex with a round point possible. It removes the diseased tissue along the entire canal, which results from chronic abscess. They are ideal for carrying shreds of cotton to dry canals or to carry hydrogen dioxide for swabbing, or medicine to seal in root. For the latter, cotton is wrapped loosely, insert in canal and with a turn unwinding and at the same time pull against side of root, medicated cotton is left. They furnish the best means of

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applying both cocaine and pressure to upper third of sensitive canals. For this the cotton serves the further purpose of helping in the removal of particles of pulp tissue. The many uses to which this broach can be put greatly restricts the use of the barbed extractor. This all seems so simple and commonplace to one who has long used this method, it hardly seems worth while to relate it. Still, many who choose this method do not properly employ these aids.—*Western Dental Journal.*

## WHAT MEDICAL INSPECTION MEANS.

COMPARING notes with a skilled oculist and general surgeon on the way the new Act of medical inspection among school children would work he, the old-fashioned Tory, and I, the new fangled Socialist, agreed on this: that it was a long overdue measure, and that physical well-being must come before mental stimulation. While he told of youngsters thrashed because they would not learn to read, being tested and found with such defective sight that they could not see a letter, I recalled cases of children so ill of abscessed teeth that either home or State meals would be wasted, and starvation might almost happen amidst plenty.

Unless the Act is a perfunctory farce it will need the creation of fresh regiments of doctors and dentists before it can be conscientiously carried out. Measured in the terms of the middle-class attention, if the learners are not only to be looked at, labelled, and forgotten, but actually treated for their ailments and defects, more than the total list of registered medical men and dental surgeons will have to be added to the present fifty or sixty thousand.

The professions are generally speaking, well employed, in some places probably overworked, and the students passing through barely fill the vacancies by death and retirement.

You see where my argument is leading you. To the cost of professional attendance on disease already so burdensome to the nation, one simple Act of Parliament may indirectly lead to a doubling of the burden, and then we are only dealing with the population during the few years of school life.

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To widen out the calculation to the provision of medical attention to all the forty-three millions on the average basis of expenditure on a middle-class family on which they would call necessities, not luxuries, you might reach the appalling total of eighty or one hundred millions of money. A bill of £10 for a year's doctoring is not an excessive estimate for the five people who might compose our average household; so if all are to be nursed, physicked, and waited on by eye ear, chest, tooth, or toe specialists as need arises, we should equal on those matters the whole national taxation. And, what just cause or impediment is there against the equal attention to the worker and his child, as to the man and his dependents in a different class. Once within the walls of a well-conducted hospital there is no difference. An oil king or an oily stoker smashed up in a railway accident will receive precisely the same skill and careful nursing when the ambulance has borne away the two fragments of humanity, brought down to a level of equal unhappiness.

But the hospitals touch only a fringe of cases outside the accidents and poor-law inmates. The masses still wait in patient queue at dispensary, club doctor's room, or suffer unaided; for rent, bread and butter, boots, and dresses out of the weekly pound leaves but little for consultations with "my medical man," or appointments with "my dentist."—*Herald of Health.*

## DEATHS UNDER ANÆSTHETICS.

CONSIDERABLE interest was manifested in a meeting of the Medico-Legal Society of London, held on March 24th, when Mr. Justice Walton, the President, occupied the chair.

The discussion on Dr. L. Freyberger's paper read at the last meeting, entitled "An Analysis of 74 cases of sudden Death while under the Influence of Anæsthetics," had been adjourned and the proceedings were commenced by Mr. R. Henslowe Wellington who read a short paper on the Legal Liability of the Anæthetist, in the course of which he said: Dr. Freyberger read his paper on "Deaths under Anæsthetics" before this society on February 11th,

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1908. That paper was limited to a narration of 74 cases upon which he had made post-mortem examinations for the purpose of inquests in the Westminster and South-Western jurisdiction of the coroner. Out of the 74 deaths, 71 occurred at the five large hospitals and three in private practice. Though Dr. Freyberger gave an interesting narrative of these cases he drew no deductions from them. But during the short discussion which followed Dr. Frederic W. Hewitt gave us to understand that the majority of deaths from or under an anæsthetic were preventable, and that if death took place it was, as a rule, not the patient nor the operator that was at fault but the anæsthetist. I take it, then, that in his opinion the patient dies from an overdose of the anaesthetic—*i.e.*, that he or she is poisoned owing to a want of care on the part of the anæsthetist. That we all value Dr. Hewitt's opinion goes without saying, but it must first be proved that these deaths are due to the anæsthetic itself, and secondly to the want of reasonable skill, care, and attention on the part of the anæsthetist and not due to any contributory cause on the part of the patient from an idiosyncrasy, or to his pathological condition at the time of the operation, or on the part of the operating surgeon, and how can one differentiate between these, or say that there is not a combination of them as causes contributing to the death and so exonerate everyone concerned? It would be well for the Privy Council, with whom this matter rests, to make it a penal offence for an unqualified man to administer any anæsthetic, whether local or general. Perhaps the coroner's court is not the *fons et origo* of exact scientific knowledge upon the matter of immediate scientific cause of death in these cases, though it must be admitted that the court certainly has a useful function to perform in the matter and should ascertain if there has been any *malpraxis*. But I am struck with the idea that a most useful office might well be created by the county councils if they would appoint some one with a medical training and a coroner's experience to act as a registrar, such as the hospitals possess, to make an abstract or digest from the depositions, taken at inquests by the coroners, upon these and all other deaths. These depositions are at present a mass of wasted material, but would be a source of much useful information if in the hands of such an officer or registrar. It has been argued by some



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(though not at this society) that if the anæsthetic were not required then the anæsthetist is liable at law. Surely if an operation is necessary an anæsthetic is, humanely speaking, equally so. It is then the operating surgeon who is to be called into question if anyone for *malpraxis*, but who can controvert his opinion as to whether the operation was necessary or not? If the anæsthetist is an unqualified practitioner and is engaged by the qualified operator, or if an unqualified operator engages a qualified anæthetist, then the qualified and registered man, surgeon, or dentist is guilty of "covering," under the regulations of the General Medical Council, whether the patient lives through or dies under the anæsthetic. And here I will say *en passant* that it is very doubtful as to whether the dentist who has the L.D.S., without the full qualification of the physician or surgeon, is qualified to give any anæsthetic at all, or whether he is not limited to the administration of nitrous oxide gas and must call in a qualified practitioner to give the other anæsthetics; he is then in the same position as the unqualified man. If the anæthetist is engaged by a surgeon to administer the anæsthetic, the surgeon is the servant of the patient and agent to find a capable anæsthetist, and if both show reasonable care, skill, and attention neither of them is liable for *malpraxis* whether the patient lives or dies. Again, if the operating surgeon engages an anæsthetist who gives an anæsthetic for an illegal operation, the anæsthetist if ignorant of the illegality of the operation cannot be held liable whether the patient survives or dies, but if the anæsthetist knows the nature of the operation to be illegal he is equally liable to answer with the surgeon for felony if she survives and for murder if she dies. If the *causa causans* of the death is due to a pathological condition of the patient, unknown until the patient is upon the operating table, the death must of necessity be one of misadventure, or if due to a recognised pathological condition and the patient or his representative had been warned of any risk and accepted that risk the patient then accepted full responsibility and exonerated both the surgeon and the anæsthetist. Supposing that the anæsthetist sees danger from the anæsthetic after he has commenced his administration and witholds his hand, at the same time warning the operating surgeon that to proceed is dangerous, the *onus probandi* is perhaps thrown upon the

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surgeon if he proceeds with the operation, though it may be well-nigh impossible to finish it forthwith. But naturally the two must work together and do their best for the life that is in their hands and then no one can reasonably find fault or sustain any action at law for *malpraxis*. When a patient enters any hospital and an operation under an anæsthetic is required the patient expects, and the law implies, that a competent anæsthetist will give the necessary anæsthetic, and if a qualified practitioner administers it and uses reasonable care and skill he cannot be held liable for *malpraxis* if unforseen death supervenes. Further, if an unqualified man, as pupil, is manipulating the anæsthetic apparatus under the supervision of a qualified anæsthetist the former is not acting illegally, nor is the latter liable for "covering," as this is permissible under the regulations of the General Medical Council. But there is often the risk that the young anæsthetist is hurried in his work by the busy hospital surgeon who is anxious to hurry on the operation and get away to his private practice, consequently the anæsthetist runs the risk of administering a poisonous dose of the anæsthetic. This is an argument in favour of special resident anæsthetists at all our large hospitals. In conclusion, the immediate cause of death attributable to the anæsthetic, *per se*, as a poison, must first be proved beyond any reasonable doubt; and then a further proof that the administrator of that anæsthetic or poison—and it matters not whether he be a qualified or an unqualified practitioner—did not use reasonable care, skill, and attention must be shown before he can be made answerable to the law for damages or punishment. But the administration of any anæsthetic, whether for a local or general anæsthesia, by unqualified practitioners—which is carried on to a very large extent throughout the kingdom—is a grave public danger and should, perhaps, be made a penal offence by statute.

The President then suggested that Dr. F. W. Hewitt should propose the motions standing in his name. The question before the meeting was not primarily the medical or the scientific side of the matter but rather the question of public policy. Of course, it would be important to have the opinion of gentlemen who spoke not only with great scientific knowledge but with practical experience.

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Dr. Hewitt then moved that the two following motions be forwarded in the name of the Medico Legal Society to the General Medical Council and to the Privy Council respectively :—

1. That in view of the importance of the administration of anæsthetics this society is of opinion that it is highly desirable, in the public interest, that every member in the medical profession before he is registered shall have received instuction in the administration of anæsthetics. It therefore earnestly begs the General Medical Council to consider whether they can see their way to include a course of instruction in anæsthetics amongst their requirements in regard to professional education.

2. That as the administration of any drug or drugs with the object of producing generalised insensibility to pain or actual unconsciousness for any medical and surgical operation, or during child-birth, cannot be safely undertaken without medical knowledge and skill, your petitioners humbly pray that legislation be granted whereby the administration of any drug or drugs with either of the aforesaid objects by any person other than a duly registered medical practitioner or some one acting immediately under his supervision, direction, and instruction be made a penal offence.

One question seemed to Dr. Hewitt to come to the front before all others on that occasion—namely, the means which should be adopted for protecting the public against accidents under general anæsthetics. It was one of the most vital and pressing questions of the day. The present state of things he could only describe as antiquated and slipshod In the first place what was the present position of the law? He felt that he was treading on most delicate ground because he was not a lawyer. It appeared that any person, whether qualified or unqualified, experienced or inexperienced, reputable or disreputable, might adminster an anæsthetic, and provided that he did this to the best of his ability and with no unlawful motive he was not likely to be punished or even blamed if his patient died as the result of the anæsthetic given. Was it right in the public interest that some of the most powerful drugs in the British Pharmacopœia should be at the disposal of ignorant, if well-intentioned, persons? The community was protected against risks incidental to the sale of poisons, the adulteration of food, milk, and the like, but the advertising bone-setter, the herbalist, or in fact anyone might freely employ chloroform without any infringement of the law. When anæsthetics were first introduced, more than half a century ago, they were often intrusted to unqualified persons, nurses, and others; but surgery had completely changed since then and the requirements of the

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surgeon and of the public were such that the administration of an anæsthetic, in the modern sense of the term, could only be safely undertaken by those possessing medical knowledge and skill. Possibly the attractions of medicine and surgery had taken away men of brilliant abilities whose work would have been welcomed by those who had interested themselves in this particular branch, but at the present time the average medical man who gave an anæsthetic and the general practitioner in the country had not had the amount of training which he ought to have had and that amount of experience which would entitle him to administer these drugs. Secondly, he would refer to the share which the educational authorities took in the matter. The General Medical Council, which governed the various examining bodies, did not make a course of instruction in anæsthetics one of its requirements. It recognised that some instruction should be given. He had written recently to the 22 examining bodies of England, Scotland, and Ireland and he found that only eight made it compulsory for candidates to have received any instruction in anæsthetics. So that a man might graduate in medicine and surgery at one of our leading Universities without ever having administered an anæsthetic. In England there were 11 examining bodies; of these seven required a course of instruction and four did not. In Scotland there were six examining bodies but only one required a course, and in Ireland there were five, none of which required it. That was not a satisfactory state of things and something was required to remedy it. Then what was the state of things at the hospitals? There was some improvement in this direction but at a certain number of them there might be a rather better system, both of instruction to students and of administering the department responsible for the use of anæsthetics. He thought that there ought to be some men of the highest professional and academical attainments at the head of the teaching portion of this study, and that especially there was room for resident anæsthetists at many of the large hospitals. The result of this unsatisfactory state of things was shown by the annual returns of the Register-General and by the weekly records of cases of death under anæsthetics. He was not contending that deaths could be avoided. He was not dealing in any way with the question of specialism; he was dealing merely with the average medical

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man, and he maintained that the average medical man passed from his hospital without having the proper equipment in this department of practice in the public interest. Statistics must be looked upon as absolutely valueless. Who could say what particular share the anæsthetic, the operation, or the pathological condition of the patient had in causing the the death? A committee of the British Medical Association sat some years ago upon the subject and all its labours were practically thrown away. Nothing came from that most carefully conducted clinical inquiry simply because it knew in discussing any given case that there was this difficulty. The two proposals which he submitted would, he personally believed, have the effect of very materially lessening the evil with which they were confronted. The Society of Anæsthetists had, he believed, approached the General Medical Council and had been told that there was no room for another subject, but he thought that it must appeal to everyone who recognised the importance of the subject that some alteration was necessary. He congratulated the society in occupying the happy position of being of great use not only to the public but to the medical profession in general, which by reason of being split up into a great number of bodies was not able to act as could a single society of this character.

Mr. Henslowe Wellington seconded the motions.

Sir Alfred Fripp said that the question was an extremely complicated one because there were many different points of view from which it might be approached. Dr. Hewitt's proposal that every student should have a course of instruction had, of course, won hearty support. The second motion should have the support of the medical profession, but if such a law was passed that none but qualified men should administer anæsthetics, it would be hitting a large number of the public who got their tooth extracted and a whiff of gas for the modest half-crown. They would be driven into the hospitals and dispensaries and the large body of the medical profession who made their money by small driblets would suffer. Speaking as coming from a hospital with a large dental department he thought that they would find themselves overburdened with work. It opened up the possibility of having to face a very large social question of whether there was not already more than enough done for that very

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large class that could afford something but could not afford to pay the full fee for medical or surgical attendance and who were very prone to get their services for nothing at all. As regards operations in the country very difficult circumstances were found and where it was not always possible to procure the services of a special anæsthetist. Whether this should be met by the creation, or rather multiplication, of the special class of anæsthetists, or whether it would be better met, as Dr. Hewitt had suggested, by the leavening up of the whole profession by requiring students to take a course in anæsthetics, as was done at many hospitals, was worthy of consideration. He was surprised to find that the responsibility of the administration of anæsthetics was upon the surgeon. He had certainly thought that the surgeon who availed himself of the assistance of the skilled anæsthetic shifted the responsibility. If the surgeon dared to interfere no anæsthetist would brook that interference for a moment. In his hospital they took proper care that every student should have attended a course in the administration of anæsthetics and should have seen them administered and have taken part under the skilled anæsthetist attached to the hospital. He believed that such a course tended to the turning out of a class of men much more likely to be able to avoid those common mistakes of the past.

Dr. R. J. Probyn-Williams regretted that the discussion was confined to the two motions, which would receive the hearty approval of anæsthetists present. He thought that Dr. Hewitt was rather extreme when he said that he wished for more teaching in anæsthetics and at the same time said that the drugs were safe. If he had been fortunate enough not to see a patient die on the operating-table it was exceptional. There were many cases at any rate in which the patient was in the absolute extremity of danger and nothing but the greatest skill had saved his life. It was a good deal owing to the efforts of the Society of Anæsthetists that at any rate the Royal College of Surgeons of England had made this important branch of practical science a part of its curriculum.

Dr. F. J. Smith referred to Dr. Hewitt's statement (made at the February meeting of the society) that nine out of ten deaths under anæsthesia could be avoided by greater care upon the part of the anæsthetist and said that it surely went

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beyond the limits of fair criticism of the whole body of skilled anæsthetists. He thought that motion No. 2 contained a pious opinion which he was afraid would go the way which good intentions were said to go. He could not imagine the legislature passing anything like an Act based on those lines, or interfering with quackery, of which perhaps nineteen-twentieths of the members availed themselves. There must be hundreds of operations performed by the medical man which the student had never performed. He contended that if a man did his level best he was not responsible for any particular catastrophe. He asked the coroners present if they honestly thought that any 12 jurymen they called together were fit judges to decide the question as to who was responsible for the death? What would be the effect of the motion upon some unfortunate practitioner who met with a catastrophe when one of the jury asked what steps he had taken to resuscitate life and who on receiving the answer which he would not understand would say that he was going to stick out for a verdict of manslaughter. He protested against coroners holding inquiries in these cases. He was heartily with Dr. Hewitt in wishing that the students should be educated, but it must be remembered that whilst in London there was nothing easier than to get a skilled anæsthetist it was very different with a man say in Wiltshire. A degree of skill would be expected from Dr. Hewitt which would not be expected from a practitioner in the country.

Professor J. Glaister (Glasgow) considered that the present state of the law was anomalous. It was news to him that herbalists and bone-setters gave chloroform; he never heard of it in Scotland. It had been his misfortune to have to make inquiries into deaths under anæsthetics in every hospital, small and large, in and around Glasgow and some in private cases. He was inclined to think that chloroform was one of the most uncertain drugs in its operations because the factor that was not constant was the person to whom it was being administered. Dr. Hewitt must consider the living factor a little more. Each man in the hospital schools in Glasgow received tuition in the administration of anæsthetics. Dr. Hewitt would find himself on dangerous ground in stating that nine out of ten of the cases of death could be avoided by attention on the part of anæsthetists. In hos-

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pitals men of the highest rank as anæsthetists had deaths. There was surely a share in the condition of the patient which must be considered. There were two classes of operation—the operation of necessity and the operation of expediency. Surgeons had not infrequently to operate to give a patient a chance of life when he would not be justified in withholding that chance. He did not think the profession should advertise itself as incompetent to do its work. The second motion, he agreed, was but a pious opinion ; he quite supported the first but unfortunately everybody was crying for lengthening the medical curriculum and if they were medical students they would think it long enough already.

Dr. F. J. Waldo said that from an examination of the machinery whereby the facts relating to investigated deaths were recorded he was led to believe that the data were worthless as to the ratio of deaths to the administration of anæsthetics. He referred to his article on this subject that had already appeared in *The Lancet*.*

Dr. C. Templeman (Dundee) said that at St. Andrews University no student was allowed to graduate without having had several opportunities under skilled supervision of the administration of chloroform, but they were not required to show a certificate on coming up for examination. All cases of death under anæsthetics in Scotland were inquired into by the Procurator Fiscal in precisely the same way as were other cases of sudden death, with the addition that the Crown required that the whole of the precognitions with the report should be submitted to some qualified man who was asked to report (1) whether the operation ought to have required the administration of an anæsthetic ; (2) whether the patient had been previously examined to see if there was anything to contra-indicate the administration ; and (3) whether the anæsthetic had been properly given. All these inquiries were held without the facts coming before the public at all.

Professor H. Harvey Littlejohn (Edinburgh) said that he thought the subject far too wide to lead to any good discussion. There was no advantage in holding a public enquiry. Surgeons must give chloroform for operative purposes and there was no object in setting up the public mind against the

* The *Lancet*, March 21st, 1908, p. 851.

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use of it and in making people believe that there were greater dangers than was really the case. He went most strongly against Dr. Hewitt if he said there was no danger connected witht he administration of anæsthetics. They knew that people died not from chloroform but under chloroform, sometimes during the operation from some causes apart from chloroform. Then patients came out from chloroform and sometimes died afterwards. What was the proof that death had taken place from chloroform? Could it be obtained from a post-mortem examination? No. He had made many post-mortem examinations and found nothing diagnostic. Could they get proof from a chemical examination? Certainly not. What did the inquest lead to? How were they going to prove any fault either on the part of the surgeon or the administrator so long as he could say he used ordinary precautions? There was no object in having a public enquiry. The only object was to make out what was the cause of death, though he thought there ought to be a post-mortem examination to try and find out what was the cause of death in circumstances entailing the proper scientific examination of the organs. If competent men did that after a time there might be material to lead to an understanding of the state which led to a predisposition in some people because no doubt there was a predisposition to suffer from the effect of chloroform in individuals.

Dr. J. Blumfeld referred to Dr. Hewitt's statement that nine out of ten deaths were preventable. If deaths were inevitable then those who performed the largest number of operations should have the largest number of deaths, but the reverse was the case. A year's cases were reported in the newspapers numbering 74, and out of these five happened in the hands of men who were constantly engaged in giving anæsthetics and the other 69 in the hands of men with whom it was only an occasional duty. It did not seem to him to be a fair argument that because they did not believe Parliament would ever be induced to legislate on the lines suggested the society should not endeavour to introduce the thin end of the wedge, even if there was no immediate result.

Dr. J. F. W. Silk wished to dissociate himself from the old-fashioned idea that to say that some cases were inevitable was incorrect. He believed that there were cases in which

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it was perfectly impossible to avoid death. He believed that things had been very much improved and although it might be that the licensing bodies did not require any particular form of definite instruction, in most medical schools, at any rate, training was given. He entered a most emphatic protest against the statement that inquests should be held in all cases. One of the favouring factors in causing these deaths was the state of terror which was often induced in a patient by reading sensational literature on the subject. They could not muzzle the press but he would muzzle the coroners.

Dr. W. H. Wilcox thought that post-mortem examinations were of great value in many cases.

Dr. Harvey Murphy, barrister-at-law, thought that so long as a qualified man was doing his best the law was perfectly clear, but what was wanted in the interest of the law and the public was to prevent unqualified men from dealing with dangerous drugs.

Mr. W Schroder said that the coroner had no power to hold a private inquiry. He had a discretion in certain cases but that did not apply to any deaths occurring from unnatural causes. It was clearly laid down in the Coroners' Act of 1887 that he should inquire in all cases due to violence and where he has reason to believe that the death was unnatural. He held that death from anæsthesia was unnatural and as the law stood an inquest should be held in every case.

Mr. H. Bellamy Gardner thought that they were 50 years behind the time. Chloroform was used everywhere and surely death from it was as natural as any form of death. It could not be differentiated from death arising from the injection of antitoxin to save a patient from diphtheria. He had been an anæsthetist for 13 years and stood in constant terror of being dragged before the coroner and his reputation and living taken away from him in consequence. He had given chloroform in over 20,000 cases and he could not conceive of anything more terrible than having to go before a jury who knew nothing about the subject. The simplest thing would be for the coroner to accept the certificate of two medical men which should be taken in cases of deaths while under anæsthetics as sufficient.

Mr. Hubert Sweeney, barrister-at-law, thought that statistics were of value, for otherwise the present discussion

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would not be taking place. He thought that even when the medical man did his best he should not be entirely exonerated from responsibility. He might use a drug about which he knew nothing and with regard to which he had not taken the precaution to be properly qualified. If death occurred surely some responsibility attached to him for neglecting to bring himself up to date in his profession. As regarding the suspicion which resulted from inquiries, suspicion would be ten thousand times greater if there were no coroner's inquests as advocated by some of the speakers.

The President said that he quite agreed with the last speaker, and if a person killed a man in performing some operation on him it would not be an absolutely sufficient excuse for that person to say that he had done his best. With regard to the subject of inquests, although that was a little outside the special matter which they were considering, it was impossible to confine the discussion to the resolutions altogether because, after all, it was a discussion on Dr. Freyberger's paper. The law was perfectly simple and plain. The difficulty arose from the facts. The law said that a coroner must hold an inquest if he thought the death was an unnatural one. The coroner was the judge, and if he had reason to think it an unnatural death he must hold an inquest. That involved various questions. To apply it to the death from anæsthetics, in the first place there must be reason to think that the death was caused by chloroform; that was the kind of death they were considering. And then he had to consider whether death by chloroform administered as an anæsthetic in the ordinary course of medical or surgical practice was such a death as an unnatural death. That question might, perhaps, be considered by the court some day and therefore he (the President) was not going to deal with it now. If death by chloroform was an unnatural death, and therefore if the coroner had reason to think the death was a death by chloroform, he must open an inquest. It seemed to him (the President) to follow that if the death was by an operation, if the man died from an operation, that plainly would be an unnatural death and there would be an inquest in every case in which a man died from an operation. The two things seemed to be on the same footing. With reference to the second of the resolutions, he had not had time to look into

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the matter carefully, but he thought that undoubtedly the only medical practioner who committed an offence by practising without a qualfiication was the apothecary. He thought the Act of George III. was still in force by which persons were forbidden to practise as apothecaries unless they were qualified apothecaries. So far as he knew to practise as a physician, he (the speaker) did not mean to say to pretend he was a physician, but to do the work of a physician or a surgeon, was not in itself a penal offence. To practise as an apothecary appeared to be a penal offence. Why he did not know. But a man might perform operations or administer medicines and so forth provided he did not practise as an apothecary, whatever that meant, without committing an offence in doing so in itself. Of course, if he killed somebody in the course of his practice and he was not qualified he (the speaker) quite agreed that it was not sufficient for him to say he had done his best if he was doing something which was in itself a dangerous thing likely to cause death unless done with great skill and he knew he had no skill. In such a case he thought it would be obviously manslaughter and probably wilful murder.

The first proposition was unaninously agreed to.

Dr. Hewitt, replying on the second, said that the one object before them all was the safety of their patients. There should be no hair-splitting. When he said that nine cases out of ten were preventable he was speaking of the cases which had been described by Dr. Freyberger and others which clearly indicated that in a large number of cases the patients died from intercurrent asphyxial conditions which might have been avoided. Again, a gentleman who had recently died with an honourable record passed through a life of anæsthetic cases without having ever lost one—he had tens of thousands of cases. He (Dr. Hewitt) contended that the average medical man if properly trained on the principles such as a master of the art would be able to transmit to his students would be able to save life in about the proportion he had indicated. He had never intended to say that chloroform or any drugs could be regarded as safe. By careful treatment it was possible to render them comparatively safe—that was to say, if given in a haphazard way it was a dangerous drug, if given on a proper scientific principle is was not a dangerous drug. Dentists in the

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country administered gas because there were no properly trained men. The very large number of deaths occurred from asphyxia and unless a man had been highly trained he was not able to watch the respiration and guide it along through its various abnormal phases in such a way as thoroughly to protect the life of the patient.

Dr. Freyberger having briefly spoken the second proposition was put to the meeting and carried.—*The Lancet.*

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Lining Badly Fitting Vulcanite Dentures.—Take for instance a full upper case: Use the plate as impression tray and modeling compound for taking the impression. Heat the plate in water to a temperature as high as the patient can tolerate, place in it a thin layer of soft compound and introduce it into the mouth; take particular care to press it well back in order to keep it from protruding. When the case is well up and back have the patient close the jaws and hold them firmly together while you chill the case thoroughly with ice-water. Remove from the mouth, and with a warm knife or a file trim the rims just as you want them to be in the finished case, and try in the mouth to see if the contour of the lip and articulation are right. Next run the cast into the impression thus obtained, and when the plaster sets invest high in the lower half of the flask, letting the plaster come just to the line of your compound, so that when you run the upper half the plate will come away entirely within it. But before running the upper half, remove the entire palatal portion or "roof" of the plate with a bur, trimming close up to the teeth. With a warm knife remove the same portion of the modeling compound underlying it. Now place a piece of wax the thickness you want the palatal portion to be, wax up around the edge, and flow the upper half of the flask. When the plaster sets, place the flask in water and heat until the compound is sufficiently softened to separate. Remove the compound and wax, and then go over the gum surface of the old rubber carefully with a large bur and freshen it up completely. Paint with a solution of rubber in chloroform, pack and vulcanize, and when you take the case out of the flask you will find that you have a very easy one to finish and an excellent piece, at an expenditure of a minimum amount of time and labour.—G. W. Staples, *Texas Dental Journal.*

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# Dental News.

## FALSE TEETH FOR PAUPERS.

At the last meeting of the St. Albans Board of Guardians, Mr. Arnold moved that the Board should contribute £1 10s. towards the cost of providing an outdoor pauper with artificial teeth, and this gave rise to a discussion on the principle involved. As a matter of fact, the teeth had already been supplied at a cost of £3, half of which had been raised privately, and a local clergyman had undertaken to find the other half if the Board would not make the payment.

Mr. Arnold explained that the woman had had artificial teeth for thirty years, and the old ones got beyond repair. After having teeth for so long, it was impossible for her to do without them.

Mr. Simmons objected on principle, as he thought it would be a bad precedent. If they once paid for false teeth, they would have many applications.

Mr. Arnold said he did not wish to establish a precedent; each case should be dealt with on its merits.

Mr. C. Sharpe felt that it was not the duty of the Guardians to find false teeth.

Mr. Silvester supported the resolution.

Mr. Townson supported the resolution on the basis that if a pauper broke a limb the Guardians attended to it properly, and if his teeth were out of order they also should be attended to.

Dr. Wells said after the woman had had teeth for thirty years, she could not get on without them.

On being put to the vote, eight voted for the resolution and eight against.

A Voice: Now then, Mr. Chairman, your casting vote.

The Chairman (the Rev. Canon Glossop): I shall vote for the teeth.

Mr. Simmons said he hoped the Chairman would ask the Press to treat the matter as taken in committee.

The Chairman: It has gone too far now for that, under any circumstances.

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## JUBILEE DINNER.

Sir Frederick Treves has consented to take the chair at a Dinner to be held at the Hotel Cecil, on Thursday, June 25th, in celebration of the Jubilee of the Royal Dental Hospital, Leicester Square. He is most anxious that the debt on the building of £47,401, which weighs so heavily on its resources, should be paid off this year, and confidently appeals for contributions to the funds of the charity.

## To Correspondents.

Communications intended for insertion in the ensuing number must be forwarded to the Editor, at the Offices, 289 and 291, Regent Street London, W., by the 8th and 23rd of the month, and must be duly authenticated by the name and address of the writer.

No notice taken of Anonymous Communications. Name and address must always be given, although not necessarily for publication.

We cannot undertake to return communications unless the necessary postage stamps are forwarded.

It is earnestly requested of our correspondents that their communications be written on one side of the sheet only; and we also beg to call particular attention to the importance of a carefully-penned signature and address.

All communications relative to subscriptions and advertisements are to be addressed to the Publishers, Messrs. J. P. Segg & Co., 289 & 291. Regent Street, London, W.

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# CARIES AS A SOURCE OF INFECTION.*

By Geo. W. Cook, D.D.S., Chicago.

About a decade ago I presented some investigations on the bacteriology of decayed human teeth. From that time up to the present I have studied and observed with interest a number of phenomena that are striking, in that they furnish an extensive field for further investigation. I had devoted about three years prior to the time above referred to to investigating possibilities of tissue beyond the apical ends of the roots of teeth becoming infected by some of the more pathogenic forms of bacteria, especially those of tuberculosis and actinomycosis. On following up these distinctive pathological conditions I have isolated, and studied with some care, a large number of bacteria found in and around the tissues of tooth substance. I have also followed up my observations on the possibilities of the cervical lymphatic glands becoming infected from badly broken down tooth substance.

* Read before the Odontological Society of Chicago and published in *The Dental Review.*



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These observations have been verified, both from a clinical and experimental standpoint, by others. I have also added to the list of cases. At that time I reported a number of well defined cases of infection. I am better prepared at this time to state that the observations then made were founded on correct bases.

That infection of a tubercular nature can pass through the pulp canal of teeth into the surrounding tissues, far beyond the seat of entrance, is a fact beyond any question. When I say pass through the pulp canals of teeth, I do not wish to be understood as saying that these micro-organisms will pass through the healthy pulp tissue but that they will pass through after the pulp has been completely disintegrated. This has been demonstrated.

The morphological changes that must of necessity take place in certain forms of bacteria in the mouth make it extremely difficult to determine always by microscopic slide examination the true bacterial forms there exhibited. Therefore, in most cases we injected, or inoculated, animals with the products from these root canals and tissues around the teeth. There is one thing that was striking in the cases where a microscopic finding revealed tubercular bacilli in which there had been a considerable mass of putrefying pulp tissue, that the bacilli of tuberculosis seldom gave a positive pathogenic effect. This fact seemed to reveal a question of considerable interest, and that is, will the tubercular bacilli remain constantly virulent in the presence of putrefactive processes of animal tissue? This question might also be applied to many other bacteria. However, the presence of putrefying mass could have but little influence upon the strictly pus-producing micro-organisms of the human mouth. Their environments in such a condition seem to have but little effect upon their virulent properties, for it has been

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found that the staphylococcus in putrefactive processes would produce an acute inflammation and pus formation in animals without any reference to where they had previously been located.

In this connection I might say that the pus-producing organisms found in carious teeth, or in the putrefactive processes of the pulp tissue, under strictly aerobic conditions, maintain their virulent properties with almost constant regularity. In the decomposition of the pulp, under anaerobic conditions, they, to an extent, are changed morphologically and sometimes pathologically. However, if they have a living tissue from which to draw their oxygen they are much more liable to maintain their virulency almost to a constant degree.

One of the peculiarities that seems to exist, with reference to the bacteria of the human mouth, is that they are peculiarly symbiotic ; in other words, they can live in constant relation with each other producing various processes of fermentation and decomposition of tissue, apparently producing these various processes as if there was but one micro-organism present. There is one peculiar process that is hard to harmonize with the facts in certain processes and that is, oftentimes we will find a tooth broken down and caries reaching the pulp and the pulp has decomposed. We often speak of this as a putrescent pulp, when as a matter of fact putrefaction does not take place to but a slight degree in the presence of the free oxygen of the air. In such cases I have found the pulp to contain a number of bacteria, some of which might cause putrefaction, some fermentation, and some capable of producing pathological changes in living tissue. In such cases the bacteria present will cause tissue changes, to the extent that we may have but slight degeneration of the tissues, as, for instance, in blind abscesses around the

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apical ends of roots of teeth, until there has been considerable loss of tissue. A large pocket may be the result without there being any very active inflammatory process. On the other hand, such processes may not terminate into pus formation at all. But in the formation of cystic sacs around the roots of the teeth, the serous product may be of such a nature as to act on the bacterial cell and cause its complete destruction without there having been any particular disease process, other than that of a cystic or a degenerative change that goes an from the changed functional activity of the tissue cells, as they appear in such pathological processes.

We find constant only a few distinctive forms of bacteria of the teeth in badly carious conditions and in the destruction of the pulp tissue, while investigations show the presence of many others that may be intruders in these territories, any one of which may be capable of producing pathological conditions if permitted to enter the living tissue. The tubercular bacilli and the ray-fungus are apparently capable of passing through the decomposing masses of the pulp tissue and successfully reaching a place where they either will be taken up by the lymphatic system or reaching the tissue surrounding and producing their peculiar pathological processes.

In a paper published in *The Dental Review* (April, 1901) on Actinomycosis, I there showed that some of these ray-fungi were capable of living a non-pathogenic parasitic life for a period almost indefinite ; in other words, I found in a badly decayed and broken down tooth a ray-fungus which had all the characteristics in morphological appearance of the typical forms. I kept this case under observation for more than a year, to find the ray-fungi down in the pulp canals, and never so far as my observation went did they produce any of the characteristic pathological lesions. Berestneff classified the ray-fungus into a saprophyte or non-

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pathogenic and parasite or pathogenic ray-fungus. At the time my former observations were made I was of the opinion that this was rather uncertain, inasmuch as the ray-fungus, as I have studied its peculiarities, seldom, if ever, really established a saprophytic process. While to an extent they can live in dead tissue, they will seldom, if at all, produce what we at the present time understand as putrefactive processes. But this question interests us but little in this connection.

In a case of actinomycosis that came under my observation in 1903-1904, I determined the fact that the ray-fungus has many peculiarities when it is subjected to the oral secretions and permitted to remain there for a considerable time. They will very seldom grow in the saliva of the human mouth as the branching thread forms, as they do on the ordinary artificial culture media, but they will in the majority of cases grow in long thread forms and break up into comparative short rods. In a culture media made by taking the salivary glands of the bovine and chopping the gland tissue up and expressing out all the fluid, after adding distilled water to the mass and making agar-agar from the solution, this organism grows only in the branching threads without producing the characteristic club ends. When it is grown in this media for some time and transferred back to the human saliva it grows only as short threads and rod-form.

This observation is sufficient to justify our statement formerly made—that the ray-fungus' natural habitat is not that of the human oral cavity. Of course from the cases reported in the previous paper, infection from the ray-fungus is usually brought to the oral cavity from the hay or grass fields, barley, or wheat straw; for it has been shown that the transferring of this organism from diseased locate to

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other animals of the same specie is not attended with any great success.

In the discussion of the tubercular bacilli in connection with such processes we are not able to obtain such accurate data as in the case of the ray-fungus, for the simple reason that the ray-fungus can be cultivated artificially more easily than a tubercular bacilli.

My object in presenting this paper at this time is to state that after ten years of study upon these problems I am more than ever convinced that my early observations were correct. I have, since reporting the former cases, added three more cases of tubercular gland infection with surrounding tissue, that are directly traceable to badly broken down decayed teeth, with two cases of actinomycosis. One of these tubercular infections was such a marked and interesting case that I should like to speak of some of the peculiarities that I there found ; A woman, 37 years of age, who had been operated upon by the general surgeon for the removal of the cervical glands on the right side of the neck. Several operations had been performed before she came under my observation. She had two badly broken down molar teeth on the right side, with the pulp canals open to the apex, and with a fistula discharging on the buccal surface near the roots of one of the teeth. These roots were removed, and scrapings taken from the pocket were inoculated into guinea pigs and rabbits. These animals showed signs of tuberculosis in a comparatively short period ; the nodulated tissue at the point of inoculation was removed and the examination showed the presence of the tubercular bacilli. The roots of the other tooth were removed and a thorough curetting of the pockets and tissues was made. She then returned to the general surgeon who

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removed more cervical glands along the border and angle of the jaw, and the case made a very successful recovery.

Since we recognize that bacteria are the principal exciting causes of disease and produce many of the pathological lesions that are manifested in the morbid changes of the tissues, we cannot fail to see the importance of a closer and more minute study of special bacteria that are intruders in the oral cavity. But it also leads us to the importance of more minutely studying the bacteria that are habitual inhabitants of the mouth, and especially those that are so intimately connected with the diseases of the teeth and surrounding tissue. Since we are forced by the strong circumstantial evidence to believe that bacteria play an important role in decay of teeth, and are always present in a carious and broken down tooth, it indicates at once that we have closely allied with the mouth and the digestive tract a great source of infection. From the history of individual cases we are able to follow closely the artificial cultivation of bacteria and by inoculating animals with these various forms removed from carious dentine and pulp canals we may demonstrate many bacteria that are extreme exciters of diseased tissue.

The presence of the staphylococcus and streptococcus are frequently met with in such localities as we have mentioned. And since we look upon these micro-organic unicellular organisms as taking an active part in inflammation and suppuration, it is important that these organisms should be studied with a good deal of care. Since my early bacteriological study of the organisms of the human mouth, and the diseased tissues that are so frequently present in the oral cavity, I have on a number of occasions found these organisms almost incapable of exciting inflammatory processes after their removal from decayed teeth. After inoculating

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them into animals with varying results of pathogenic properties, it leads one into the realms of comparatively the unknowable. It is difficult to determine the kind and class of culture media that are required to render these organisms non-virulent, or by growing them slowly that they are capable of maintaining their virulent properties.

It has been shown by a number of investigators that the streptococcus brevis is quite commonly observed in the oral cavity. This particular form is supposed, under ordinary circumstances, to be quite free from pathogenic properties when inserted in the tissue, although it has under some circumstances produced marked inflammatory processes. It can also take part in the formation of acids. There has been isolated from carious teeth about nine different forms of bacteria, any one of which is capable of breaking up carbohydrate compounds and forming acids.

A very interesting fact I have observed in studying the inoculation of animals from carious teeth is, that only in a few instances did we fail to have response from the animals, showing direct effects of the virulency of the organisms introduced into them. It has not always been an easy mattter to recover these organisms from the animal bodies after inoculation and incubation. There seems to be formed many times in the animal, after inoculation an antitoxin or some substances that destroy the bacterial cell. But if these bacteria are introduced directly from the teeth into the animal body the animal invariably responds to the inoculation, and sometimes with such severity that it causes acute septicæmia that terminates fatally. This brings to our notice an important point and that is, an instrument used in the excavation of carious cavities should never be allowed, if possible, to enter the tissues around the teeth or the hand of the operator. If such a condition should occur the

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operator should at once take the necessary precaution to disinfect the part. This also illustrates another important point, and that is, that artificial cultivation of bacteria from carious teeth invariably means the lessening of the virulency of these bacteria. Of course, it would be quite impossible for me, with the limited observations of cultivating the tubercular bacilli in and around carious teeth, to say whether or not this organism would have a more pathogenic property than it would under ordinary circumstances.

The observations that I have made lead me to consider that the bacteria that are constantly present in badly decayed teeth are of an extremely virulent nature ; especially is that true of the bacillus dentalis, the streptococcus and staphylococcus. When I have cultivated these organisms in a bouillon media made from the salivary glands of animals, they invariably show a greater virulency than they do when cultivated in ordinary culture media. In a number of instances animals, in which inoculations were made directly from decayed teeth, would develop more acute forms of inflammation and would run a more fatal course in the animals than they did in either the common ordinary culture media or the specially prepared culture media, as above mentioned. As I have just said, we should be aware of the infectious nature of bacteria in carious dentine.

In carrying on some of the experimental work, above referred to, I have, on a great number of occasions, attempted to determine, as far as possible, what agent could be introduced as a disinfectant in the cases in which the infection had been introduced. Among a large number of agents that are classed as antiseptics and disinfectants I have come to look upon chinosol as first in the list to be introduced into the tissues, if accidental inoculation should occur. Trikresol (at the present called phenol), is the next agent in efficiency

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But it is important that these agents should be introduced immediately or as soon as possible after the accidental inoculation.

It should be the practice of every dentist when excavating or working around a carious tooth, to repeat a number of times applying a disinfectant to the cavity during the operation. I might say that the most efficient remedies for application in the cavities of teeth are iodine and chloroform, because they are splendid agents for disinfecting and they will penetrate carious dentine further than any other agent. In the use of iodine in carious cavities a 10 or 15 per cent. solution of potassium hydrate should be applied and then with a solution of ammonia water the cavity can be thoroughly sterilized and the discoloration removed. Then should the operator's instrument accidentally injure the soft tissues there will be no possible harm follow of an infectious nature. If these general rules are followed, it will save the possible acute or inflammatory conditions being established that would result in a permanently infected condition of the gum tissue.

This same practice should be carried out before clamps and ligatures are placed on carious teeth.

The general suggestions that are made here are the results covering about thirteen years of bacteriological study of general infection of the tissue and the observations of bacterial findings in certain carious teeth. I have attempted here to show only the general side of a few factors that enter into and become a part of our daily practice. A study of the more minute problems that enter into the bacteriology of the human mouth cannot of necessity interest the general practitioner, and, therefore, I have discussed this subject only in a general way. This month is the thirteenth anniversary of my study of bacteriology, in a system-

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atic and scientific way, of the micro-organisms of the human mouth. During these thirteen years there have been seven weeks in which I have not made cultures and microscopic examinations of the bacteriology and the tissues that enter into the oral cavity and come strictly into the field of dental surgery. And with all of these weeks and months, with a systematic study of the literature that is directly associated with this work, I am more than ever convinced that the pathology of dental caries, erosion and pyorrhæa alveolaris have just crept into scientific importance. And the great subject has only been touched upon.

## DENTAL PROPHYLAXIS AS APPLIED IN THE DAILY ROUTINE OF PATIENTS,

### With Special Reference to the Preservation of the Third Molars.*

By Joseph Head, M.D., D.D.S., Philadelphia, Pa.

It has been found that saliva has a profound inhibitory action on the acid decalcification of the teeth, and especially so in the case of lactic acid. For instance, a one to five hundred lactic acid watery solution will decalcify tooth enamel badly in thirty minutes, but a one to five hundred lactic acid saliva solution has protected tooth-enamel for fifteen days without the slightest sign of decalcification being apparent. According to some tests made by me, the ordinary mouth-washes were not able to more than penetrate the outer layer of such a bacterial mass as can collect between the teeth in from 24 to 48 hours. If such a mass as collects between the teeth or under the edge of the gum is lactic acid-forming, the thick mucous coating may effectually keep the saliva or mouth-wash entirely out of the lower portions of the

* Read before Section III. of the National Dental Association and published in *The Dental Cosmos*.

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colony, which thus is at liberty to set free its lactic acid in a condition most favourable for tooth-delcalcification. A 1 : 20,000 lactic acid watery solution will decalcify enamel in from eight to ten days so that cheesy looking shavings can be pared with a lancet from the slightly whitened, shiny, decalcified surface. Thus it seems clear that any such acid, guarded from the neutralizing action of alkaline disinfectant mouth-washes or normal saliva, will speedily attack the enamel and dentine substance.

The question of prophylaxis is primarily, How are we to neutralize the effect of these bacterial masses, which not only let loose acid, free to cause decalcification of tooth-structure, but also allow infection both of the tooth-structure and of the gums? The philosophy of the procedure is simplicity itself. These masses of bacteria must be mechanically removed with sufficient frequency to prevent them from growing large enough to form decacifying acid or to infect the soft tissues. After these masses are removed, alkaline disinfectants on the one hand will inhibit the growth of the thin bacterial film that may be left, while on the other hand the normal saliva will readily hold in control any stray acid that may develop within the next six or twelve hours. For a mass of bacteria such as would be dangerous as infection or as an acid-developer can hardly grow from a bacterial spread film in less than twenty-four hours. Thus if these colonies are removed, say every twelve hours and their locations treated with alkaline antiseptics, it follows as a matter of course that the teeth and gums will be kept free from harmful decay or decalcification. Dangerous pits or spots of decalcification will have to be made smooth and capable of being easily cleansed by operative procedure, and therefore do not come under the present discussion. Neither do I speak of the methods and instruments used for removing tartar masses, as

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that most difficult of operations must be accomplished at judicious intervals by office treatment at the hands of the dentist.

The question under discussion is: given a patient with a set of teeth free from imperfections and infection and superficial discolouration, how shall we so instruct and train the patient that the teeth will remain practically free from infection between his prescribed office visits?

Recent tests prove conclusively that tooth-powders cut the teeth; they also prove that wet tooth-brushes without such powders do not cut the teeth. Therefore, the tooth-brush wet with water or an antiseptic should be skilfully used so that every surface of the teeth and gums capable of being so reached shall be brushed free from bacterial plaques at least every morning and evening. Tooth-powder should be used guardedly. Merely rinsing, it has been demonstrated, will not remove these plaques, but the tooth-brush will, and so the patient should be instructed how to thoroughly brush the gums and teeth. Healthy gums, in my opinion, can withstand brushing quite as readily as the tissue about the finger-nails. Infected gums will bleed and be lacerated by vigorous brushing, and in getting well will also contract and recede to the size of healthy tissue. Nevertheless, the best way to cure bleeding infected gums is to keep them free from infectious masses, and the tooth-brush vigorously and skilfully used is ordinarily the best instrument for removing and excluding such infection colonies. And yet it is an incontrovertible fact that the tooth-brush will not cleanse the interproximal spaces of the teeth, where acid infection masses most readily accomplish their work of destruction. These masses must be removed, and to tell patients to rely for their removal either upon the tooth-brush or rinsing with mouth-washes is to lull both them and ourselves with a sense of false

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security. The only way in which bacterial masses between the teeth can be rendered harmless or be destroyed is to remove them mechanically.

One dentist told me that he instructed his patients to brush the teeth for fifteen minutes morning and evening, using plenty of tooth-powder. Were the patients to brush the teeth for ten hours a day until all the enamel was worn away, they would not be able, by this procedure, to cleanse the interproximal spaces; while a two-minute brushing ought to be able to cleanse the exposed surfaces perfectly. We can only cleanse the interproximal spaces with something that will really get into the spaces, and that something is floss silk. If, for instance, morning and evening both surfaces of each approximal space are swept with floss silk, and if the exterior surfaces of the teeth and gums are cleansed thoroughly with brush and water, and finally the mouth is bathed for two minutes with a copious quantity of some alkaline antiseptic mouth-wash, new decay and infection ought to cease entirely. A loop of floss silk passed entirely around the neck of each tooth and slipped from the gum margin over the cutting edge will cleanse the tooth of soft deposits better than the old-fashioned way of merely slipping the silk in and out of each interproximal space. The mouth-washes I have found most valuable are glyco-thymoline and listerine; there are many good ones. Merely to sprinkle a little antiseptic material on the tooth-brush is to fail. After the colonies are removed mechanically the remaining films must be bathed with a considerable volume of the antiseptic agent for a considerable time, if the remaining bacteria are to be destroyed or their growth appreciably inhibited. One part of listerine or glyco-thymoline to three parts of water, held in the mouth for two minutes, is a reasonable procedure, but if the patient while dressing can hold the solution in the

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mouth for five minutes, the extra time will be well spent.

### Cleansing the Third Molars.

But now let us speak of cleansing the third molars, for these teeth owe their proneness to decay simply to the fact they are seldom if ever brushed. This arises from their peculiar anatomical position, which renders them difficult of access. The ramus of the mandible closes completely past the upper third molar, while the lower third molar is so buried in bone and gum beside the ramus where it joins the body of the mandible, that only special training can enable the patient to brush these teeth and their gum attachments really clean. The spring of the bristles of a tooth-brush when in use is about half an inch. When, therefore, in the ordinary procedure the brush is thrust backward in the effort to cleanse the upper third molars the back of the brush strikes the ramus of the jaw so that the bristles reach only to the middle of the buccal surface of the second molar. In pulling it forward the bristles pivot on the tooth-substance without practical friction, until the back of the brush has well passed the bristle ends, which means that the second molar is only half brushed and the third not at all. The same difficulty occurs with the lower second and third molars to almost the same extent. Since teeth, then, can only be brushed by bristle friction, unless some means be found to get greater scope for the brush so that the back of the brush can reach at least half an inch beyond the third molars, the brushing of the latter teeth with a tooth-brush is out of the question. While the jaws are closed, or nearly so, as the ordinary brushing daily shows, this greater scope is impracticable, but if the patient will open the mouth wide the ramus of the lower jaw will swing back so that there will be a space of three-quarters of an inch, into which the tooth-brush can be inserted so that the middle of the brush can

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be placed squarely back of the third molar. Then by drawing the brush vigorously backward and forward the third and second molars can be readily cleansed. The same procedure applies to the lower third molars. The middle of the brush should be placed back of the third molars, when with a dragging motion along the necks of the teeth, perfect removal of the bacterial masses will be readily accomplished. Sometimes the posterior surface of the third molars is buried in gum up to the grinding surface. Sometimes the gum has so receded that the surface just back of the tooth is most difficult to reach with a brush. When either of these conditions arise, the patient should be taught to sweep the posterior wall of the third molar with narrow tape or floss silk, which will readily accomplish what the brush could not.

I have not gone into the various methods of using a tooth-brush: the up-and-down motion, the backward and forward motion, or the small rotary. What we wish in brushing the gums and teeth is bristle friction, and any method that will accomplish this is effective, and any that will not accomplish it is ineffective. The great and final proof of the efficiency of any method of prophylaxis lies in the one great question. Does it keep the teeth clean? The great proof that the patient has properly brushed the teeth is clean teeth, and when the teeth are found either generally or locally covered with bacterial colonies it is absolute evidence that the patient is either ignorant or careless. Sometimes it also means that the dentist is careless. I have not discussed the general systemic conditions when acid phosphate salts may be poured into the mouth through the saliva glands, but when this is suspected, in addition to the treatment just given, the mouth should be rinsed with milk of magnesia every evening just before retiring.

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British Journal of Dental Science.

LONDON, JUNE 15, 1908.

## BRITISH DENTAL DEFENCE ASSOCIATION.

A MEETING has recently been convened "to consider the formation of an Association of Dentists for the better protection of the dental profession." The following resolution, which had already been carried at a preliminary meeting, was also discussed; "That an Association be formed under the title of the British Dental Defence Association with a view to taking some practical and business-like steps to check the spread of unqualified competition, and that a meeting of the profession be called with a view of receiving suggestions in furtherance of this object."

We are indebted to the *British Dental Journal* for our information. It publishes a special report of the meeting, from which we gather that it was only attended by sixty-six persons; that most of these persons had only the vaguest ideas as to what was to be done, how they were going to do it and what it was going to cost; and, furthermore, many of them seemed to be very ignorant of what the British Dental Association had done and was doing, for the protection of the profession. There seems to have been a section of the British Dental Association present, because the following resolution was only lost by two votes "That this meeting,, recognizing the great evils to the public and the profession resulting from unqualified practice, binds itself to support the British Dental Association, with the express purpose of helping it in the work it has carried on since its inception, of



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maintaining to the best of its power the provisions of the Dentists' Act, 1878, and that funds subscribed by this meeting shall be specially earmarked and placed at the disposal of the British Dental Association for the purpose of fighting legal cases."

A Provisional Committee was subsequently appointed, consisting of dentists without qualification, but who are registered as being in practice before the Act. We shall watch their future course of action with a considerable amount of sympathy and interest.

With sympathy—for, reading between the lines, we cannot help seeing that this is the bitter cry of the "Registered Man"; the man with no qualification, no hospital training, who is no longer young and whose numbers are steadily diminishing by the remorseless hand of death. The L.D.S. should have his knowledge at his finger tips and also has the outward and visible sign of it in his diploma. He is acquainted with the latest ideas in conservative and prosthetic work and has his scientific societies where his wits are polished by contact with his fellows. He has received a better preliminary education, has loftier ideals and ambitions and caters for a better class of patients. The Registered Man, very often—though there are many exceptions—is not far removed from the tradesman in his education, his methods and ideals. What is more to the point, he is not far removed in these matters from the unregistered practitioner, and, consequently, he is obliged to go down into the arena and fight the latter with his own weapons.

Looking at the whole affair from this standpoint—which we honestly believe is the true one—and not wishing to say a word to offend the Registered Man with whom we heartily sympathise, we can only say that we think the newly formed Association doomed to failure. Its methods so far do not impress us as being either "practical" or "business-like," and we fear that when the newly-formed Committee gets to work it will find that it has put its hand to a labour, about

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the difficulties of which it has not the faintest idea.

We do not believe that the Legislature will readily give us the sole right to practice and certainly it will never give us the sole right to make artificial teeth. We have a certain amount of hope in the "specially qualified" clause of the Act, but we cannot help thinking that our safest fortress in the battle with the unqualified is in being possessors of knowledge, skill and character, aided by our diploma and our close and valued association with our medical brethren.

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False Teeth, Where Paid For.—At Falkirk Sheriff Court, Elizabeth Sneddon, wife of a miner, pleaded guilty to stealing a cash box containing £11 19s. from a house there. The accused said she had been pressed by her medical man for payment of a set of false teeth with which she had been supplied, and she took this way of obtaining the money. This was her first offence, and the Sheriff gave her the benefit of the Probation of Offenders' Act, and ordered her to repay the money within ten months.

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Ancient Artificial Teeth.—It is certain that the ancients had a knowledge of dentistry; but it is difficult to determine when or by whom the use of artificial teeth was introduced. Herodotus says that the Egyptians had "dentists for the teeth." In the British Museum there are various dental instruments which had been found in the ruins of Pompeii, and Galen, in the second century, describes the method of extracting teeth by means of forceps. Belzoni says that artificial teeth were in use in antiquity, since he found some specimens in the Catacombs. Modern dentistry admits that the first to teach how to make artificial teeth was the Arabian Albucasis, and in his work, "Al Tarif,' are drawings of instruments used for this purpose. The earliest known allusion to artificial teeth is by Martialis, in the first century: "You use without a blush false teeth and hair." But, Laelia, your squint is past repair." Ben Johnson mentions false teeth in the "Silent Woman."

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ENGINE-DRIVER'S TEETH.—An exceptional claim was brought before the annual meeting of the Great Central Railway Mutual Provident Society at Sheffield. The rules, it appears, do not provide that artificial teeth shall be given to members; but an engine-driver who had had all his teeth knocked out by an accident on the engine, and whose sufferings had been intense, made an application for a set of false teeth in addition to the usual benefits. It was argued by one delegate that the teeth might be supplied as a limb, and another submitted that the teeth might come under the head of surgical appliances. By 132 votes to 92 the application was refused.

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BRIDGE REPAIR.—Now and again a porcelain facing is broken from a crown or bridge, leaving the pins intact, and with well-formed heads. In such cases a strong repair may be made by selecting a suitable tooth, removing the pins, and with a diamond drill making countersunk holes to accommodate the pins on the backing, fitting it to place and cementing it on. When this is done, it is wise to see that the new tooth is not imposed upon by the occluding tooth.—*Brief.*

ONE WAY TO SET A LOGAN CROWN—DEALING WITH A SUPERIOR CENTRAL.—Grind root in the usual manner, ream out post hole slightly larger than post on crown, drill a small hole about 1-32 of an inch deep posterior to post hole; this answers as an extra guide for exact adjustment in the finished work. Select crown proper size, colour, etc., grind crown so that when adjusted to root there will be 1-32 or less space at the labial joint, and space at palatal joint sufficient to attach sprue wire. Warm crown and post slightly, also warm small piece of inlay wax, pass crown post through wax and place on wet root and adjust to the exact position wanted when finished, chill wax and carve around neck of root, remove crown with wax intact, remove the wax from the upper part of post, leaving wax on post at the position of entrance of post hole on root, attach sprue wire on palatal part of wax and invest crown with wax intact. Cast as an ordinary inlay. When cool, polish and you have a crown that fits the root, a post that fits the hole and an extra guidepost to help to adjust the crown in the exact position.—HALE W. DE JARNATT, Centralia, Mo.

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# Abstracts of British & Foreign Journals.

## THE EFFECT OF AN EXCESS OF MERCURY UPON SHRINKAGE, ETC.

By Dr. Marcus L. Ward.

The first thing for us to notice in this connection is that a certain time is required for the alloy to reach its maximum strength. Second, that the period of maximum strength lasts but a short time, after which the alloy begins to deteriorate in strength. When we see that the first alloy had a crushing resistance of 497 lb., and in less than two years it had one of 187 lb., and that the second alloy, whose resistance was 462 lb., deteriorated to 163 lb. in the same time, are we not inclined to ask, Is there a definite crushing resistance to this class of alloys? The question becomes the more forcible when we consider that the alloy deteriorates before it is made into fillings as well as afterward. With these ch nges going on in the alloy before it is made into fillings, and a similar change going on after the filling is made, it is indeed difficult to say what the effect upon strength of an excess of mercury in the filling is, without stating the age of the alloy before it is made into a filling as well as the age of the filling itself. With other conditions the same, the filling which is packed with too much mercury in it is weaker than one that is packed at just the consitence to squeak under the force of the plugger—a condition which we should not be surprised to find, when we compare it with other materials we handle in which the solvent has been left in excess. A definite relationship between the solvenlt and the substance to be dissolved also appears to give ns a filling more permanent in form than one in which the solvent is in excess, though there must be undissolved material for the excess of solvent to act upon if a great amount of movement take place. While it is true that changes in temperaturd often affect substances composed of materials with low melting-points and weak affinities, it has been my observation that undissolved material and an available solvent are capable of producing more change than anything else.

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## Conclusions.

The following conclusions may be deduced from the foregoing discussion:

(1) If the maximum strength is developed at the time of making the filling, and the minimum amount of movement obtained after the filling is inserted, it is imperative that the alloy be well dissolved in the mercury.

(2) More mercury than we should have in the filling should be used to put the alloy into solution.

(3) At no time during the mixing of the alloy and mercury should the mercury be in such proportion as to make the mass sloppy. If it be in such proportion it is said to be in excess.

(4) At no time after the mercury and alloy have been ground in the mortar at least 1¼ minutes and mixed in the hand 1 minute should the mass be so non-coherent as not to take markings of the skin with light pressure. If it is in such propertion there is too little of it.

(5) Alloys of like composition may vary a little in the amount of mercury required, because the annealing and comminution may vary a little.

(6) The amount of mercury advocated by the makers of this class of alloys is approximately correct for one year, providing the alloy has been kept at office temperature during this time.

(7) If the alloy be kept at these temperatures for a larger period than one year the percentage of mercury should be lessened in proportion to the age, or the alloy should not be used—the latter course being preferable.

(8) Large amounts of mercury do little harm to a given amount of alloy if the two are not worked together.

(9) The effect of a slight excess of mercury upon an alloy that shrinks is to increase the shrinking.

(10) The effect of a slight excess of mercury upon an alloy that expands is to increase the expansion.

(11) The effect of an excess of mercury upon change in composition is to remove the constituents most soluble in mercury—viz., tin and zinc.

(12) These alloys deteriorate in strength before as well as after they have been made into fillings, hence have no definite crushing resistance.

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(13) The effect of slight excesses of mercury upon the strength, whatever it may be at the time of making the filling, is to increase it—assuming, of course, that the excess was removed before packing.

(14) The effect of a slight excess of mercury upon stability is to increase it, if the excess be removed before packing, and to decrease it if it be not removed before packing.— *Cosmos.*

## SOME ESSENTIALS IN COMPARATIVE ANATOMY.*

By H. A. Fynn, D.D.S., Denver, Colo.

The primordal type of teeth was a simple cone.

Remove the point of this cone and the result is a truncated cone.

Fuse, two, three, four or five of these together and we have the complicated patterns of the higher orders of animals represented by the bicuspids and molars of mankind. This higher class, however, represents a very small percentage compared with the lower orders, which remain constant to the original type. In man, teeth are merely accessories—useful in a way for excising and masticating food but not of vital importance, for it is possible for human beings to live without these adjuncts; but among the lower animals they are absolutely necessary—their very existence depending upon these organs, they being required not only in obtaining food but as weapons of offence and defence; so, if for any reason they prove defective, the owner quickly falls a victim to those who are better provided with these very useful weapons.

The true cone is found in all fishes, reptiles, lizards and in many higher orders, in slightly modified form. With a slight backward curvature it serves their purpose admirably. Being carnivarous, compelled to catch their prey while alive, these teeth are perfectly shaped to fasten upon and hold the slippery, struggling fish or animal which has been caught; its very struggles serving to more firmly impale it. Many of this type have also a hinge joint which permits these teeth

* Read before the Colorado State Dental Association, Colorado Springs, Colo., June 21st, 1307.

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to lie horizontially backward, offering no obstacle for the ingress of food, but upon the slightest touch assuming an upright position, preventing the escape of the poor victim.

We are inclined to formulate a definition of teeth as we see them in the mouths of our patients or from our slight knowledge of the dentnres among the domestic or semi-domestic animals. Teeth firmly fixed in the inferior and superior maxillary bones, usually consisting of two sets, a temporary or milk and the so-called permanent set, which is supposed to serve the wants of the individual throughout its lifetime. The purpose of these is the excising, tearing, and masticating food. In man, they also assist very materially in articulate speech. From our special point of view we are inclined to regard the function of the jaws as primarily for the accommodation of the teeth, forgetting that the mandible especially has a much higher office, almost a vital function in assisting deglutition and respiration.

These animals in which the function of mastication is paramount are few compared with those in which the teeth are used principally as weapons. War is universal. From the lowest plant to the highest mammal, the strong are eternally preying upon the weak. This, with the survival of the fittest, is nature's law, and the teeth play a very important part in the result.

In this struggle for existence they have become highly specialised, as the extraordinary development of that magnificent weapon in the male wild boar, the cuspid, or with the central incisors in the male elephants and the left central in the narwhale, which attains a length of eight or ten feet. These are purely weapons of warfare and of no use in the mastication of food.

Another beautiful example is found in the development of the poison fang among the reptiles. Originally, probably all reptiles had the same number and kind of teeth—two rows on the upper, and one on the lower jaw. Their habits were largely similar. Their prey was seized, held firmly on these recurved teeth, and gradually swallowed. Then perhaps there came a time when a certain species was in danger of extinction. This might be brought about from scarcity of food and too much competition, climatic conditions, or depredations from enemies. Nature, for some reason, wanted to continue this particular species. To do this it gave it an especially long tooth known as a fang; perhaps this not

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proving sufficient she grooved this fang on the inner side to convey poisonous saliva into the wound. It is a short step from the grooved fang to the hollow fang and from the poisonous saliva to the gland containing the poison which is injected through the fang into the wound, as in the case of the common rattlesnake. As I have said, non-poisonous snakes must seize their prey, hold, and swallow it. The poisonous snake simply lies coiled until its victim comes within reach, when it strikes and lies quietly back, knowing the animal can be found dead within a few feet and can then swallow it at his leisure. Now the remarkable thing about all this is that with the development of the poison fang the other teeth on the upper jaw, being no longer of any use, have completely disappeared. Another beautiful phase of this specialisation is that two fangs are developed simultaneously lying side by side, horizontially. When the snake prepares to strike, one is erected and generally broken off in the act; the other, however, in a very short time takes its place and, to keep the supply, eight or ten more in the inner side of the jaw are in process of development.

As another example of the absolute degeneracy of the teeth one species of snake in Africa lives entirely in trees and feeds upon the eggs of birds. Here again the teeth are useless and have practically disspeared, but two little spinous projections have developed in the throat which break the shells in swallowing, permitting them to reach the stomach in the best possible form for assimilation.

The turtle and tortoise have no teeth, but a remnant of a tooth band, which may have been the means of supplying them with these organs at some prehistoric time. Birds have no true teeth. But fossil remains show they once possessed them. These same so-called lower orders have a great advantage over the higher in the successional teeth. These teeth forming along the inner side of the jaws, passing up over the border, there attaining their highest usefulness—after serving their purpose being cast off and new ones taking their places. This dentition being found in the fishes, reptiles and lizards.

Another fine provision in animals is found in those in which the teeth grow throughout a lifetime from persistent pulps. This condition is found in those orders where there is extraordinary wear, as in the rodents—rats, rabbits,

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squirrels, beavers, etc., also in the tusks of elephants. With these tools, a squirrel can quickly gnaw through the hardest nut, a beaver fell a large tree, and a rat has been known to gnaw through an iron pipe to obtain water. From these examples it would seem as if nature had given to each family, excepting man, the best possible dentures, serving their purposes perfectly, assisting in propogating each species, not only assisting but making such propogation possible.

As the teeth of these animals are marvellous in their perfection, marvellous in their specialization for certain things, they are equally marvellous in their degeneracy when, for any reason, they have outlived their usefulness. The teeth of man are excellent examples of degeneracy, degeneracy in structure, degeneracy in shape and occlusion, degeneracy of retention in the alveoli. And this degeneracy is not confined to the teeth but extends to the upper and lower jaws, the muscles of mastication and the accessory muscles. In fact we have the jaws and muscles of a child in the head of an adult.

According to Hæckel and others, our ancesters 3,000,000 years ago first appeared upon this earth during the Eocene period of geologic times. They possessed 44 teeth consisting of three incisors, one canine, four premolars, and three molars on each half of the jaw. They were characterised by the small size, imperfect structure of the brain, which had not then become a true organ of thought. They all had short legs and five toed, flat-footed feet. From these, unquestionably, have come the entire family of primates consisting of apes, monkeys, lemurs, etc., and from these in turn has come man.

Whether we are directly descended from the apes or from another line similar to the apes makes but little difference, it is true beyond a doubt we had a common origin. Hæckel says that comparative anatomy proves to the satisfaction of every unprejudiced and critical student the significant fact that the body of man and that of the anthropoid ape are not only peculiarly similar, but that they are practically one and the same in every important respect. The same 200 bones, in the same order and structure, make up our inner skeleton; the same 300 muscles affect our movements ; the same hair clothes our skin ; the same groups of ganglionic cells build up the marvellous structure of our brain ; the same four-

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chambered heart is the central pulsometer in our circulation; the same 32 teeth are set in the same order in our jaws; the same salivary, hepatic and gastric glands compass our digestive process; the same reproductive organs insure the maintenance of our race.

Man, at this time, had a retreating forehead, small brain development; the upper and lower maxillary bones were extremely prognathous. He was omnivorous, living upon fruits and vegetables when procurable, but not at all adverse to a meat diet. He possessed possibly 38 teeth, like the New World monkey of to-day, or 32, like those of Africa. He preyed upon other animals, seizing them with his hairy claws and cuspid teeth and devouring them as soon as killed. He was a rival to the cave bear and similar to him in his habits.

During thousands of years there was a gradual development of the cerebrum. From instinct—and this instinct comprised three things—preservation of life, obtaining food, and propagation of his species—there was being gradually developed a reasoning faculty. At a result of this reasoning, he one day made an invention, and from that time to the present day he has been king of all the animal kingdom. That first invention was the bow and arrow, and some one has pronounced it the greatest of all inventions, for it demonstrated the superiority of man over all other animals. With this weapon it was comparatively easy for him to obtain food. It could be killed at a distance and eaten at leisure. It was no longer necessary to pursue, spring upon, tear to pieces and devour his prey.

Man had become master of the situation and lord of all creation. From this invention came others—fire at first to keep him warm, then to cook his food; a crude sort of clothes to protect him from the cold and storms; a family circle in a very limited way, and a simple means of communicating one with another by sounds and signals.

His progress now becomes rapid. He is able to build a sort of hut of earth and stones, the precursors of the houses of to-day; he takes precautions against the winter by storing food; he is learning to till the soil in a very crude fashion, and some sort of tribal relations may exist. He is beginning to domesticate animals. From this point it is but a short step to him as we know him to-day. To account for all this it is

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only necessary to note the great development of the frontal lobes, and with this development has come a corresponding shortening of the jaws, which shortening is going on to-day. This degeneracy manifests itself in lessening the body, the ramus joining that part at more nearly a right angle.

Of his 38 teeth, six of them have disappeared, and four or six more are now in process of disappearing. But those six may manifest themselves occasionally in the form of rudimentary teeth. The long, strong cuspid of our ancestors has been greatly modified, but the shapes of the others, excepting the third molars and upper laterals, are practically the same as they were thousands of years ago. Dr. Michaels, of Paris, believes that they have not perceptibly changed for 30,000 years.

Dr. Thompson, in a most thorough examination of the skulls of the Mound Builders which are scattered throughout the Middle West, found the teeth in those skulls differed but slightly from those we see every day. These prehistoric people were subject to many of the lesions which affect the race of the twentieth century. Impacted third molars were common ; caries occurred in some, and considerable indication of pyorrhœa was found in many others. But one thing stands out very prominently, and that is the decided prognathous shape of the jaws, showing that the shortening of the body of the bone has been accomplished during comparative recent years.

I believe that this is an important fact to us as dentists. If, as Dr. Talbot says, the jaws have shortened from one-half to one inch during the past thousand years, then the harmony in the lines and contour of the face must necessarily have changed also, so that in the twentieth century we have an entirely different type from that of a thousand or two thousand years ago. The old Grecian type would not at all typify the German, Russian, English or American people of to-day. A type of any of these would show more brain development, more rugged lines in the face, more character, more ability, and an infinitely superior class. In fact, the old head and face which Greece considered perfect would be considered rather incipient to-day, except among the Latin races. It lacked the development of the frontal lobes.

Now, it being true that the jaws have shortened and the teeth remaining practically the same size, would account in

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many instances for the irregularity which is so common to-day. If the jaws are in harmony with the balance of the face, then it surely would not be good practice to expand the arch for that would destroy the symmetry. And as two things cannot occupy the same space at the same time, and there is not room in the jaws for all the teeth, and as space must be obtained somewhere, is not extraction indicated? In extracting are we doing anything more than Nature is constantly doing where she fails to produce an upper third molar or lateral incisor? I know this is opposed by the modern orthodontist, whose creed is never to extract, nor do I, excepting in those cases where, as I have suggested, it is indicated. When I see a child emerge almost a nervous and physical wreck from a year or more of torture in expansion of arches, and when I know space could have been obtained by extraction of one or more bicuspids and nearly, or quite, as good results obtained in a few weeks, I am compelled to ask myself, Does it pay? No one is a greater admirer than myself of the magnificent work the orthodontists are doing, but, in my estimation, they are going to extremes in many cases. I ask them to remember that the jaws have shortened from one-half inch to one inch, while the teeth are pratically of the same size as before this shortening. If Nature herself, by prevention of development, is practically extracting teeth, why is it not good practice for us to do likewise? Dr. Bebb says: "If we could produce a type specimen of a skull from which man has descended, it would be impossible to find among living subjects a single specimen involving the teeth not in malocclusion in which there was not a deviation from the normal and which no amount of mechanical procedure could restore to normal."

The bones of the maxillæ tend more easily to this variation than the teeth and many times the jaws will be in absolute harmony with the balance of the body, but the teeth furnish the deformity. Extraction in these cases is not only permissible, but demanded.

Another form of degeneracy is manifested in the narrow and contracted arches—more from this cause than from mouth breathing or any other cause, and as a result, hypertrophy of the nasal bones and polypi of the mucous membrane.

It would seem that this degeneracy, to a great extent at least, is normal and purely the result of evolution; our habits our civilization greatly assisting. It is easy to under-

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stand how lack of exercise in the jaws and muscles of mastication would greatly assist in obtaining these results.

During the early history of the race, we were compelled to masticate the hardest and toughest kind of foods, now they come to us soft and tender, ready for swallowing and, in some cases, partly digested; as a result, the jaws and muscles, not getting sufficient exercise, atrophy. Irregularity also assists in producing this result. It is impossible to keep this class of teeth properly cleaned—the result is caries—the result of caries and malocclusion is inability to triturate the food properly and it is bolted. The whole series of conditions forms a vicious circle.

The thing to be learned from all this is, that we are victims of degeneracy through evolution, that it is the fate of our race and nothing can change it. What the outcome may be is uncertain. Will we ever become edentulous? Not in a thousand years, but who can say what will be our condition in ten, twenty, or fifty thousand years? Whether we will or will not depends largely upon the dentists of the world. All must admit that we do not properly care for our patients now. The fault is with both patient and operator. The time is surely coming when, with the co-operation of our patients, we will not permit one of them to lose a tooth from caries, pyorrhea or any other pathological condition, but their teeth will be preserved in comfort and usefulness throughout the lifetime of the individual. This is "a consummation devoutly to be wished." We may then have fewer patients, but we will take a great deal better care of those we have. Prophylaxis will be our guiding star and we will accomplish far more in prevention than in restoration.—*Dental Brief.*

## HOW TO USE THE TOOTH-BRUSH.

THAT most people do not keep their teeth sufficiently clean is the opinion of *The Dental Review*, as expressed in an article abstracted by *The National Druggist* (St. Louis, April). This, the writer says, is because modern prepared food does not require much chewing, and the teeth and gums, lacking this functional use, need something to take its place, in order to maintain a normal condition in the mouth. He goes on:

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"If the surfaces of the teeth were constantly wiped clean by the friction of food in mastication, and the gums stimulated to normal function by usage, there would be less dental caries, and fewer diseases of the pericemental membrane and gums. But lacking this, there arises the necessity for supplying this friction by the tooth-brush. Of the utility of this process there can be no doubt, provided, always, that the brush is used judiciously; but, unfortunately, like many another worthy thing, it is frequently abused. Much injury is often done the gum tissue by too vigorous cross brushing —the bristles forcing the thin gum away from the teeth, and leaving the surface exposed at the junction of the enamel and cementum.

"The gums and teeth will stand a great deal of friction, and be benefited by it if it is exerted in the right way, and it should be the duty of the dentist so to instruct his patient that the brush may be used judiciously. Merely to insist on the patient brushing the teeth thoroughly, and emphasize this fact at every sitting, is to take the chance of doing more harm than good by inducing the patient to cross-saw the teeth more and more, with the disastrous results already indicated.

"Nor will it do to tell the patient to 'brush the teeth up and down,' as is so often done. This is as likely to work injury as the cross brushing, by forcing the gums away from the upper teeth on the upward stroke of the brush, and from the lower teeth on the downward stroke. In fact, it is quite an art to brush the teeth properly. The brush should be made to rotate against the surfaces of the teeth, coming in contact with the gums and teeth of the upper jaw only on the downward stroke, and *vice versa*. There should, of course, be some cross brushing against certain surfaces and positions in the mouth, where the rotary method can not well be employed, but the patient's attention should be especially directed to the danger of injury to the gums by too much cross brushing at the point where the free margin of the gum covers the tooth. This evil is growing rapidly among those who are ultra particular regarding the care of the teeth, and it requires constant observation and supervision on the part of the dentist to check it. The practice of dentistry is one continuous campaign of supervision and education, and apparently when one evil is corrected another one crops up

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to take its place. Some individuals are doing more to-day harm than good with the tooth-brush, but this is no argument against the judicious use of the brush."

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## THE TREATMENT OF TEETH.

By Dr. Frank L. Platt, San Francisco, Cal.

Read before the Alameda County Dental Society, Nov., 1907.

Not long ago a patient came to me for advice and treatment, stating that she had had a troublesome tooth treated for nearly three months with no apparent result. On examination a lower left second bicuspid was found, the pulp chamber and root canal of which were loosely filled with absorbent cotton.

There was no medicament, so far as could be observed, upon the cotton, and the history of the case as reported by the patient was as follows.

The tooth had been filled several years previously and had been comfortable and serviceable up to within three months of the time the case was presented to me.

At that time the tooth became sensitive to touch or the stress of mastication and seemed elongated, or, as the patient expressed it, higher than the adjoining teeth.

She went to a dentist who quite properly opened the pulp chamber from the occlusal surface, removing part of the old filling.

The cavity was left open and the patient directed to return in twenty-four hours.

The pain and soreness promptly abated, and on the next visit to the dentist a dressing of absorbent cotton was placed in the canal.

The soreness returned, and this dressing was removed and another inserted.

This procedure had been repeated two or three times a week until the patient became tired of it and came to me for treatment.

This experience, by no means unique or uncommon, suggested the title of this paper, and it is hoped some of the

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suggestions it contains may reach the dentist who was supposed to have treated this unfortunate tooth to the end that he may achieve better results with less expense of time and labour than in the case under consideration.

Treatment in a medical or dental sense is defined as the method employed in effecting a cure, and may be applied to any branch of therapeutics.

As applied to the teeth, however, it is usually understood to mean the application of drugs or instrumentation to relieve diseased conditions not included in the simple filling of a carious cavity.

As to describe in detail the diagnosis and treatment of all dental diseases would be far beyond the limits of this paper, it will be confined to a consideration of those ordinary diseased conditions presented every day to the busy practitioner.

The majority of dental diseases, aside from lesions resulting from traumatism, are produced by uncleanliness. This being the case, the first principle of treatment is to remove the cause, that is, to place the offending tooth and its adjacent fellows and tissues in a state of reasonable cleanliness.

In many cases of peridental inflammation and incipient pyorrhoea alveolaris this alone will produce a cure.

It should be particularly impressed upon the mind of every dentist that in the removal of calculus or carious dental tissue that the use of small bladed, sharp, clean instruments is absolutely imperative if good results are to be obtained. Blunt, clumsy, instruments are never indicated, even in the gentle art of hoeing corn.

In connection with the use of proper instruments there should always be employed plenty of clean, warm water, medicated, perhaps, with a mild antiseptic. This should be used by the operator with syringe or atomizer and the patient should be provided with a generous supply with which to rinse the mouth.

If it is desirable to wash out a cavity or canal after the rubber dam is in position this may be accomplished by placing a quantity of absorbent cotton around the tooth and injecting the water with considerable force from a small pointed abscess syringe.



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Odontalgia, ordinary toothache, the result of dental caries, is the most common dental disease presented for treatment.

The first indication is to relieve the pain, and this may be accomplished by thoroughly opening the cavity, washing out the food debris it contains, and with sharp spoon-bladed excavators cutting away a sufficient amount of the carious dentine to remove all pressure from the pulp and expose to the unimpeded action of whatever analgesic remedy may be employed the actual seat of the disease.

This remedy should be used warm and the tooth thoroughly protected from the ingress of saliva by means of the rubber dam or cotton rolls and napkins, the rubber dam being preferable.

If the pulp is actually exposed and the pain produced by congestion actual bleeding of the pulp by pricking it with a clean, sharp broach will sometimes afford instant relief.

In most cases, in fully developed teeth, the exposure of the pulp is an indication for its removal, and this may be accomplished painlessly by the application of pressure anæsthesia.

Since the discovery of pressure anæsthesia, applied either by means of a soft plug or a high pressure syringe, the use for devitalizing is fast becoming absolete, and it is hoped it may soon become entirely so.

In cases of odontalgia resulting from a putrescent pulp the tooth should be placed under the rubber dam, the pulp chamber thoroughly opened and washed out clean, and before any attempt is made to enter the canal, unless an alveolar abscess has already been established, its contents should be sterilized by sealing in a small quantity of paraform placed directly over the orifice of the canal.

This should be allowed to remain for twenty-four hours; the canal may then be opened and cleansed by means of broaches and injections of warm water.

If the canal is small and tortuous it may be opened and enlarged by the use of a fifty per cent. solution of sulphuric acid used with an irido-platinum broach. Drills propelled either by the hand or engine should never be used to open a canal for purposes of treatment, and should be used only when enlarging a canal for the reception of a dowel for a crown and this should be done only after the canal has been thoroughly opened, sterilized and filled.

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Where an alveolar abscess has been established the canal should be opened at the first sitting, as then septic matter has already entered the apical space and it is necessary to establish drainage.

If an alveolar abscess either with or without a fistulous opening, does not heal after the contents of the canal associated with it has been removed, and the canal cleansed and sterilized, access to it should be obtained through the alveolar process, the root canal having first been carefully filled, the diseased tissue of the apical space should be removed, and, if necessary, the end of the root.

It may be accepted as a fact that when a root canal has been rendered aseptic by sealing in it such mendicaments as will destroy the micro-organisms it may have contained that little good, so far as the treatment of the abscess is concerned, is derived from changing dressing after dressing in the canal.

Remedies for the treatment of the pulp, either living or putrescent, should be sealed in the cavity by means of gutta-percha, temporary stopping or cement, the latter preferred.

Sandarac varnish and cotton has no place as a filling material or dressing seal in the hands of any clean, careful, competent operator.

The subject of the treatment of the teeth might be continued almost indefinitely, but the suggestions made cover the general principles of the subject, which may be further summed up by saying, be careful, be thorough, be clean.

Apply the principles of general surgery to dental surgery and do not imagine that removing a piece of stinking cotton from a putrescent root canal, and replacing it with another which will soon be as offensive as the first, is a proceeding in any way related to the proper treatment of the teeth.—*Pacific Dental Gazette.*

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## ARTICULATION OF NATURAL AND ARTIFICIAL TEETH AT VARIOUS AGES OF LIFE.

A study of the anatomy of the mandible or lower jaw from early life to old age reveals to us an ever-changing relationship to the upper jaw, and the obtuseness of the ramus to the body of the bone in infancy is again reverted

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to in old age. Hence it is that in life we often speak of second childhood, and there is more truth than poetry wrapped up in that expression, especially so far as the jaws and teeth are concerned. In early life edentulous jaws are quite in order, and this condition usually is found in old age. The approximation of chin and nose in old age is also a natural result of the wear and tear of years and a reverting back of the lower jaw to its original form.

We, as dentists and especially those of us who do more or less of restoration of articulation through crown, bridge and plate work, do not think of these natural physiological phenomena enough to construct our work so that articulation is normally produced suitable for that particular time of life. It is possible to so construct a single crown for a given case that the articulation of the whole natural denture would be locked and its usefulness destroyed and the patient curtailed in the movements of the jaw to the simple hinglider motion of occlusion. I think time of life, as well as normal or abnormal occlusion, should be carefully considered in the construction of a single crown and, of course, more careful study given where an assemblage of crowns as in a bridge or a denture full or partial. Some of our dentist friends, who are great stickers for beautiful crown work regardless of age and conditions, who would scorn and abhor any piece of work that would not be knuckled out in contour with beautiful well defined cusps carved thereon. might find that if they adhered a little more closely to conditions and not place any cusps on crowns if the natural teeth themselves possessed no cusps would get better results. If patients fifty or sixty years of age should present themselves with all or nearly all of their natural teeth remaining but badly worn, through ground off cusps, faulty occlusion, direct contact and other conditions where the teeth come together mill-stone fashion, and we decide to restore the bite by building up those teeth with crowns, porcelain or gold, inlays or shoes, or any other method and produce cusps sharp and distinct suitable for persons half the age of sixty, we are making a mistake. Anatomical conditions have changed, time has made a difference, and we must respect the natural order of conditions of the jaw over which we have no control. I think in old people's mouths, where much wear and tear has gone on, we should not be

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too eager to advise them to have the bite raised and wear and tear stopped. We should be content to round off sharply worn margins of enamel with suitable stones and disks, and not fasten a lot of metal on and about those teeth, just because one wants to be ambitious and see how beautiful and skilful he can reproduce articulation. Again where cupping of occlusal surfaces exists, these cupped out teeth should be filled with gold, amalgam or inlays, but the bite should not be raised, as it soon brings on discomfort and annoyance to the owner. It is not usually wise to raise the bite on the posterior teeth to protect the anterior teeth from the further wear. It usually produces discomfort. Comfort in old age is what your patients are looking for and should have. A lot of beautiful crowns skillfully made do not always give to the owner just what they are looking for. In this connection, it might be wise to remind some of us that assemblage of crowns or bridgework would last better, give more service while it lasted and yield much more comfort to the wearer, if it were not too closely articulated. I think it wise to so construct bridge pieces so as to escape, as much as possible, direct stress in mastication. Let the cusps be not too closely locked with antagonizing teeth in occlusion, allow the stress to fall more firmly upon the natural teeth than the bridge and you will have a more lasting piece of work.

In the construction of plates, upper or lower partial or full, we have many difficulties to confront us in articulation not occurring in the natural teeth or fixed pieces of crown or bridge work. In partial cases, it is as a rule quite fatal to the usefulness of the appliance to raise the bite for any reason for that the force of mastication falls upon the plate and not upon the natural remaining teeth. It is my opinion that if a case presents where the occlusion is so close as to make necessary the raising of the bite, a partial plate is contra-indicated and some other plan should be adopted. The natural teeth, even if only a few remain, are capable of resisting more stress than a whole plate of artificial teeth, again if the few remaining teeth have been worn through time and occlusion, consider the age and condition of the patient, and grind the cusps of the artificial teeth to meet the requirements of that case. Of course, age always plays an important

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part, as the changes in the lower jaw must be respected and articulation of the teeth must be made accordingly, if we wish the greatest degree of comfort to our patient. In slipping forward and obtusing of ramus to body of lower jaw in old age, the eminencia articularis is obliterated, and lateral motion of the lower jaw is largely increased.

In full uppers and lowers, the stability and usefulness of the appliance depend largely upon placing the artificial teeth over or under the ridge as the case may be, and in the mouth of a patient anywhere up to forty or forty-five years of age full cusps and normal arrangement of teeth can be resorted to, if the natural teeth approximated the normal; but in the same mouth in old age quite a different articulation should be constructed. The cusps should be ground in some cases quite away in fact, reversing the order by inverting the cusps and changing the sulcate groove, making the grinding surface mill-stone fashion to provide for plenty of lateral motion or have failure of usefulness and comfort as our reward. In malocclusion, such as extensive over or underbite, not only the presence or absence of cusps plays an important part in the usefulness but the arrangement of the artificial teeth to each other. The proper relation of the edentulous ridges to each other should first be obtained, then the teeth articulated, so as to be over or under the ridges, even if the finished piece articulates abnormally to a marked degree, is by far better practice than to try to make a normal occlusion out of an abnormal one, and having the appliance operating against all laws of mechanism. —*Dentist's Magazine.*

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Children's Good Teeth.—In these advanced days, when a set of really good teeth is a rarity, and frequent visits to the dentist a necessity, it is delightful to hear of a community possessing dentures of a healthy sort. Such a community exists in the Sheffield Orphan Homes at Crookes. The hon. dental surgeon, in a letter which the Lord Mayor read recently, stated that the boys and girls at the institution have good teeth. Such a state of things, he added, was a good example of what plain, wholesome diet and proper attention would do.

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# Dental News.

## THE UNIVERSITY OF MANCHESTER.

### Examination Results.
*May*, 1908.

The following have satisfied the Examiners:

Diploma in Dentistry.

*Second Examination.*

Vernon Ditcham, S. I Fillingham, Wilfred Jackson, C. E. McNabb, F. B. Preston, and L. S. Ward.

Satisfied the Examiners in Dental Metallurgy:

W. G. Dykes, J. O'H. Kennedy, and W. H. Maden.

## THE CARE OF TEETH.

Among the recommendations of the Boarding-out Committee of the Bedford Guardians was one that a girl, aged 8, be brought to Bedford to consult a dentist with reference to her teeth.

The Chairman: The times we live in!

Mr. Street opposed the recommendation. He could not afford to have his children treated like this, and he did not believe in fooling away the ratepayers' money over dentists.

The Vice-Chairman opposed the recommendation, and humorously described how he used to pull out his own teeth when a boy.

Mrs. Hill said the expense would be trifling.

Mr. Ell said it was entirely a matter of degree. It was a trifling matter, and if the suggestions of Mr. Walker could cover it but if not, he agreed with the recommendation.

Mr. Quenby, Chairman of the Boarding-Out Committee, said the recommendation was based upon the Medical Officer's report.

Mr. Hull said the teeth wanted removing, and the Committee thought it best to follow the doctor's opinion, and that it would be best for her to come into the town with the carrier.

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Mr. Hartop asked whether the County Hospital was not available for such purposes, and received an affirmative reply.

After a spirited discussion, Mr. Reynold's resolution to send her to the County Hospital was carried.

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## THE DENTAL CANVASSER.

The following recently appeared in *Truth*:—"One of the latest novelties in this enterprising age is to send out canvassers for orders in the dentistry line. An individual knocks at the door, and asks if he may have the privilege of taking out a few teeth for you and supplying their places with a superior article. I have heard of a man frightening a nervous lady dreadfully by asking for her at the door, and, when shown in, suddenly springing upon her a case of grinning "dentures," with an inquiry as to "whether we can do anything in this line for you this morning." I was asked for information the other day respecting the London Hygienic Institute, of Oxford-street, W., which pushes its business in this way, the inquirer having been led to enter into a contract under the misapprehension as to the terms, and being unable to get satisfaction by calling at the office to get the matter put right—I mean the contract, not the teeth. Naturally, gentry who practise dentistry in this way are not at the tip-top of the dental profession, and this seems to be particularly true of the London Hygienic Institute.

I find that this concern is run by two individuals named Oscar Farkasch and George Charles Smith. Smith was formerly a registered dentist in practice in Lewisham, but was brought up before the General Medical Council about two years ago and struck off the register, the complaint against him being that he had associated himself with Farkasch in a system of advertising his business by house-to-house canvassing, as above described, and that he employed unqualified assistants. He did not appear before the Council, but sent word that he did not defend his right to remain on the Register. Farkasch was stated to have carried on a similar sort of dental business at Glasgow and elsewhere, calling himself a "Hygienic Institute."

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Smith seems to have taken small account of the decision of the General Medical Council, so little, that within the next few months he was fined 40s. and costs at Greenwich for unlawfully holding himself out as a dentist, and £20 at Chatham for the same offence. Possibly to avoid further inconvenience of this kind, he last year formed himself, in conjunction with Farkasch, into a company called G. C. Smith, Limited. The London Hygienic Institute in Oxford seems to be an offshoot of this company. Under the circumstances I certainly do not see my way to recommend the Institute to those whose teeth are out of order.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE Board of Examiners in Dental Surgery presented a report in which they recommended that two summer sessions and a second winter's attendance at general hospital practice should be accepted for the L.D.S. England instead of two winter sessions as required by the present regulations, and that the courses of lectures on medicine and surgery should be attended after the completion of the courses of lectures on anatomy and physiology. The report was approved and adopted.

Licences to practise dentistry were conferred upon 28 gentlemen who have passed the necessary examinations and have complied with the by-laws of the College, as follows :

William Percy Charles Ashdown, London and National Dental Hospitals ; Ernest William Barlow, Sheffield University and Royal Dental Hospital ; William Francis Boxall, Guy's Hospital ; Ernest Bartlett Bridges, Charing Cross and Royal Dental Hospitals ; Norman Sambell Cardell, Liverpool University ; Sydney William Chetwood, Guy's Hospital ; Arthur Walter Davies, Charing Cross and Royal Dental Hospitals ; Frederic Nicklin Doubleday, Guy's Hospital ; Llewellyn Saltonstall Farrar, B.Sc.Lond., L.D.S.Glasg., Manchester University ; Charles Richard Gardner, Westminster and Royal Dental Hospital ; Mark Hall, L.D.S. Glasg., Durham University ; Fred Halsall, Liverpool University ; Leonard Austin Harwood, Westminster and Royal Dental Hospitals ; Arthur Martin Henry, Guy's Hospital ; Harold Hinson, Manchester University ; Charles Cabread Jones, Guy's Hospital ; Leonard Algernon Bertram King, Guy's Hospital ; Edward Stephen William Little, Charing Cross and Royal Dental Hospitals : Douglas John Marr, M.B., Ch. B. Aberd., Aberdeen University : Vivian Masters, Guy's Hospital ; William Grant Oliver, Guy's Hospital ; John Ramsey Palmer, Guy's Hospital ; Geoffrey Ayres Phillips, Manchester University ; Harold William

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**Read, M.R.C.S., L.R.C.P., St. Thomas's and Royal Dental Hospitals: William Stanley Rutter, Guy's Hospital; Harold Pearson Tait, Guy's Hospital; William Thomas Clarkson Webb, Charing Cross and Royal Dental Hospitals; Thomas Sanders Worboys, M.R.C.S., L.R.C.P., St. Bartholomew's and National Dental Hospitals; and Ronald Martin Wormald, Guy's Hospital.**

At the first professional examination for the Licence in Dental Surgery, held this month, the following gentlemen were approved in the subjects indicated;—

*Mechanical Dentistry and Dental Metallurgy.*—Richard Guy Ash, Royal Dental Hospital; Herbert Ferris Barge and Charles Holme Barnett, Guy's Hospital; John Batteraby, M.B., Ch.B. Manchester; Manchester University; Cecil Hastings Bradnam, Guy's Hospital; Ernest Benjamin Brown, National Dental Hospital; Henry Montague Browne, Birmingham University; Howard Canton, National Dental Hospital; Eric Horsfall Chesters, Birmingham University; Charles Frederick Constant, Guy's Hospital; Arthur Josiah Dabbs, Birmingham University; Harry Davis, Durham University; Thomas Leonard Fiddick, Guy's Hospital; John Tate Fripp, National Dental Hospital; Frank Leonard Furse, Guy's Hospital; Frederic Edwin Gill, Liverpool University; Harold Harding Glover, Guy's Hospital; Arthur Raymond Goddard, Royal Dental Hospital; Edwin Allan Thomas Green, Manchester University; Arthur Rushby Hawkesley, Liverpool University; Clement John Henry, Guy's Hospital; Robert Hodgson, Birmingham University; Clement Eugene Holburn, Sheffield University; Sydney William Ingram, Guy's Hospital; Arthur Carlyle Jackson, National Dental Hospital; Thomas Henry Jackson, Royal Dental Hospital; William Stuart Lang, National Dental Hospital; Henry Leslie Messenger, William Caffyn Miller, Cecil Graves Morris, Hubert Stanley Morris, and Charles Frederick Moxley, Guy's Hospital; James Omrod, Liverpool University; George Garfield Packe, M.A., M.B., B.C.Cantab., M.R.C.S., L.R.C.P., Royal Dental Hospital; Charles Harry Greville Penny and John Morley Pomeroy, Guy's Hospital; Frederick Gordon Pulford, Royal Dental Hospital; George Hubert Walter Randell, and Harold Rivers-Cole, National Dental Hospital; Alexander James Roberts, Birmingham University; Walter Herman Scales, Liverpool University; Alfred Gladstone Scott, Birmingham University; James Bennett Sharp, Royal Dental Hospital; Grantley Smith, University College, Bristol; James Alfred Willys Stuart, William Edward Tanner, William Andrew Thompson, Herbert Thornton, and Norman Steffan Heegaard Warner, Guy's Hospital; and Lauder Lylestone Wight, Royal Dental Hospital.

*Mechanical Dentistry.*—Albert Bangert and Ralph Chapman, Royal Dental Hospital; Norman Malcolm McArthur Douglas, Liverpool University; George Vivian Dymott, Frank Harold Edey, and Niel Edgar, Guy's Hospital; Edwin Lewellyn Zenas Fickling and Lionel David Fruhauf, Royal Dental Hospital; George Theodore Douglas Hughes, Liverpool University: Leonard Clive Matthews, Birmingham University: Bertram Charles Salter, Royal Dental Hospital: Reginald Wildblood Ward, Liverpool University; and Frederick Charles Willows, University College, Bristol.

*Dental Metallurgy.*—Robert Dudley Bell and Charles Ernest Blows, Royal Dental Hospital; Rowland Burnell Campion and Regiuald Curle, Guy's Hospital; Frederick Graham Emanuel, Royal Dental

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Hospital; Charles Repton Faulkner, Birmingham University; Kenneth George Hoby, Guy's Hospital; William Lowe Jackson, Royal Dental Hospital: Christopher Claud Marston, Birmingham University: Henry Kinnear Ovey, Royal Dental Hospital; Edward Algernon Weaver, Birmingham University; and Henry Stanley Young, Royal Dental Hospital.

# Legal.

## UNLICENSED DENTIST IN NATAL.

In the Chief Magistrate's Court, Pietermaritzburg, before Mr. B. C. Clarence, E. Brash was charged with practising on January 29th and March 19th as a dentist, without having been licensed in this colony.

It was shown by the prosecution that F. J. Bliss went to the accused and had a tooth extracted and a plate repaired. John Gardner went to him on March 19th and had his teeth examined. He had one stopped, for which accused charged him seven shillings and sixpence.

It was stated by Detective Goldstein that he examined Gardner's tooth before he went, and saw after he came out that it had been stopped.

John M. Hershensohnn, clerk in the Colonial Secretary's Office produced a certificate from the Colonial Secretary to the effect that the accused was not a licensed dentist. He stated that a dentist's assistant who is not qualified is not allowed to take out a license.

The prosecution closed its case.

The defendant stated that he was duly qualified dentist, and had a diploma from the New Zealand Government. He had applied to practice as a dentist in this colony but his New Zealand diploma was not recognised in this colony. He had been in the employ of Mr. Guy Harper for two years, and other dentists in this city. He now extracted teeth and repaired plates. He also stopped teeth for friends. He did not think that he was liable under the law as he did not charge them for his work. He had three excellent recommendations from different dentists for whom he worked. He had no recollection of stopping a tooth for Gardner. Extracting teeth and repairing plates was not a dentist's work.

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The Magistrate said that accused had admitted in a frank way what he had been doing. He had not positively denied having stopped Gardner's tooth. He (the Magistrate) could not find accused guilty on the first charge, but on the second he found him guilty.

A previous conviction was proved against the accused. It was shown by counsel for the defence that on that occasion the accused was carrying on Mr. Harper's business after he had left the colony, but understood that he would return.

The accused was fined £5 or one week's imprisonment, with one week in which to pay the fine.

## CLAIM FOR FEE.

An incident arising out of the student days of a young Sheffield surgeon occupied the attention of his Honour Judge Benson, in the Sheffield County Court, when Alexander Rae, of 52, Elm Row, Edinburgh, a dental surgeon, brought an action against Walter Damms, surgeon, of Upwell Street, Sheffield, to recover £8 17s. in respect of professional services and the supply of a double set of false teeth. Mr. A. Payne appeared for the plaintiff, and Mr. A. Neal represented the defendant.

The teeth were not made for Mr. Damms himself, but for Mrs. Fairweather, a widow, living in Edinburgh, to whom the defendant became engaged to be married while he was a student. The engagement has since been broken off. The plaintiff's evidence was to the effect that the defendant came to him with Mrs. Fairweather to have the lady's teeth attended to. He advised extraction and a supply of a double set of teeth. The work was done, and it was agreed that a sum of £5 5s. should be paid by the defendant. The account had not been paid, and the claim was now for £7 7s., the full charge for the two plates, together with a sum of £1 10s. in respect of filling some teeth for Mrs. Fairweather's daughter.

Mr. Neal raised a preliminary objection, that at the time the order was taken the plaintiff was not qualified. It was in March of last year, that he saw Mrs. Fairweather, and he did not qualify for his diploma until April.

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Mr. Payne said that the teeth were not completed until July.

Mr. Neal: He is not on the register even now, and is not entitled to sue unless he is registered.

His Honour held that the plaintiff could sue only for anything he had supplied, but not for advice or surgical treatment.

Mr. Rae said he charged nothing for professional treatment or advice when he made a set of teeth. The claim for £7 7s. had been reduced to £5 5s., this being a special fee to a fellow-student.

His Honour questioned the plaintiff as to the value of the teeth apart from the professional skill which under ordinary circumstances would be charged for, and the plaintiff admitted that, apart from the plate, the teeth, which he bought, cost a shilling each. In the double set there were 28 teeth.

His Honour: There is a good deal of difference between £1 8s. and £7 7s.

Witness: There is the plate, and we have to make a profit.

Mrs. Fairweather, an attractively dressed woman, went into the witness box, and said that in March last year she was engaged to be married to the defendant.

Mr. Neal: He had no means, had he? He had prospects.

Mr. Neal: Students generally have prospects.

Witness: He told me that when he was qualified he would earn £3 to £5 per week.

When Mr. Rae had taken out your teeth, did'nt Mr. Damms say he would pay him when he was able?—He said he would pay.

Mr. Neal, for the defendant, said that all Mr. Damms said when the teeth were supplied was that he would see that plaintiff was paid when he was in a position to do so. The price agreed upon was £4. He understood that the lady in the case had threatened Mr. Damms with litigation, which happily had not yet taken place, and he hoped would not take place. Defendant was quite prepared to keep his word in regard to paying for the teeth, and if his friend cared to take judgment for £4 he was willing to consent to that.

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Mr. Payne said he was content, and judgment was given for £4, to be paid at the rate of £1 per month.

## ACTION UNDER THE DENTISTS' ACT.

At Birmingham Police Court, the British Dental Association summoned B. Harley Lord, 168, Mary Street, Balsall Heath, dentist, for contravening the Dentists' Act, of 1878, by implying by description that he was qualified to practise dentistry, whereas he was not legally registered to do so. Mr. Sandlands (instructed by Mr. John Glaisyher) appeared on behalf of the Association, and Mr. Jesson defended. Counsel said the object of the Act was to prevent the public from being deceived. In the present case the defendant, by printed notices, represented himself as a "specialist in artificial teeth," &c. He was not registered as a dentist, and was not entitled under the Act to represent himself as a qualified dental practitioner. Henry Percy Joscelyne, a duly registered practitioner, produced the medical directory and dental directory, which he showed did not contain the defendant's name. Cross-examined by Mr. Jesson, witness said that examinations must be passed to-day for the candidate to be placed on the register, and a fee had to be paid. It was true that if a man were in practice previous to 1878 he could be placed on by a fee of two guineas. Evidence was given that the word "specialist" appeared on defendant's house at Balsall Heath. Mr. Jesson submitted that no offence against the Act of 1878 had been committed. The prosecution was mainly based on the word "specialist." Now that word appeared alone, and not in conjunction with teeth. It was simply "specialist," and there were specialists in everything nowadays. It simply meant a person who was skilled in any particular line. For the last fifteen years the defendant had been perfecting a non-poisonous anæsthetic, which when applied to the gums, deadened the sense of pain and allowed teeth to be removed painlessly. He was engaged in dentistry previous to 1878, and he could have been on the register if he had paid the requisite fee. He had had a lifelong experience in dentistry, and his father was a dentist before him. There had been no deceit at all. On the contrary, the defendant had posted up in his lobby and in his room a

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notice to the effect that he was not a registered practitioner, and he always drew the attention of customers to the fact. The defendant bore out his solicitor's statements, and said there was no attempt at deception. The Stipendary said defendant's description of himself was such as to imply that he was a qualified practitioner. He should inflict a very small fine, 20s. and the costs. "I have nothing to say against your skill," he added, "and I hope it will be a long time before I have to test it."

# Correspondence.

## A DISCLAIMER.

*To the Editor, "British Journal of Dental Science."*

SIR,—A friend of mine who is a dentist has drawn my attention to a pamphlet entitled "The Contemplated Medical Anæsthetists' Bill." It is signed by Mr. Robert Marston.

In this it is implied that I am to give a demonstration concerned with chloroform for a stake of five pounds a side. It appears a grotesque assumption that I should lend myself to such a proceeding, but as the pamphlet has been scattered broadcast I am compelled to say that my name has been used without my permission, and I have no intention of countenancing any demonstration of the kind.

I shall be obliged to you for giving publicity to this statement.

Your obedient servant,

DUDLEY W. BUXTON.

82, Mortimer Street,
Cavendish Square, W.
9th June, 1908.

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